A Scientific Expedition to Temengoh, Upper Perak.

BY H. N. RIDLEY, M.A., F.R.S., F.L.S.

In the month of July 1909, an expedition to investigate the fauna and flora of Temengoh in Upper Perak, a district unknown botanically and zoologically, left Kuala Kangsar on the 4th of the month. The party consisted of Mr. H. C. Robinson, C. B. Kloss and myself, with a number of Dyak collectors, the plant collector Amat, and servants. The heavy baggage and natives started on ahead on the previous evening. Travelling in gharries we arrived at the pretty village of Lenggong at midday. On the way we passed through a village where a Malay wedding was about to be celebrated, and found some stir had been caused by a small boy having being bitten on the arm below the shoulder by the poisonous snake *Doliophis bivirgatus*. The boy was sick and crying, but apparently more from fright than from injury caused by the reptile, as he showed no signs of the effects of snake poison, although it was some time after the animal had bitten him; we could but administer some whisky as all drugs suitable were in the baggage carts, which had gone on ahead. This handsome snake has certainly the reputation of being deadly but though the mark of the bite was visible, the boy did not seem to be in any danger of life. A little further on a herd of wild pigs was seen in the ricefields by the road. After arriving at Lenggong, 32 miles, we strolled to some limestone cliffs a mile or two further on and I collected a few plants of interest. *Colocasia gigantea* was common. The pretty azure blue *Chirita caliginosa* was nearly out of flower. *Plectranthus Kunstleri* too was abundant. We had not time for much collecting here, then, but on the return journey the plant collector in a few hours made a grand haul of new and rare plants. The beautiful Chestnut swallow *Hirundo badia* was observed dashing about near the cliffs in some abundance. On the following day we continued to travel in the gharries and arrived at Grit in the afternoon 43½ miles. Part of the road traversed some fine forest in which the tall bamboo *Dendrocalamus pendulus* was conspicuous: it is indeed very abundant all over this part of Upper Perak. The climbing bamboo *Dinochloa tjankorrek* was also seen in full flower. On our arrival we took up our abode in the resthouse.

Grit is a rather picturesque village which was formerly more prosperous but as the tin-mining industry in the neighbourhood died away the village got poorer and many of the houses were empty at the time our visit. A number of fine trees of the Tualang, *Abauria parvifolia* formed a very conspicuous feature of the village. Mr. Berkeley, the District Officer, showed us a fine lot of cattle and sheep belonging to Government, and took us for a stroll round the village. In one garden was a hedge of *Acalypha fruticosa* cultivated by the Malays for a kind of tea made from the leaves. *Solanum involucratum* remarkable for its large calyx was common here. I had never previously met with it. It appears to be confined to the north of the Peninsula. The curious aquatic aroid *Cryptocoryne affinis* was plentiful in the gravelly bed of a stream; a number of plants in flower were collected here but unfortunately the presses containing them were left behind on the following day and remained so long before we obtained them again that the plants were all spoilt. With Mr. Berkeley's assistance we engaged eleven elephants to convey our baggage to Temengoh. The elephants were a source of much interest to the Dyaks who had not seen these animals before.

On July 5 we started off the elephants with all the baggage except one load and a half which was to have come on by other elephants next day, but which did not start till we were on the return journey. We started walking ourselves on the following day at 7.30 a.m. to Kuala Temengoh, 18 miles distant, of which most of the way was through forest, and overtook the elephants about four miles from our destination. The plant collector and I collected plants all the way and obtained many interesting specimens. Shortly after leaving Grit I found the cream-white flowered orchid *Geodorum citrinum* in fine bloom and *Gastrochilus plicatus*, only previously known from a plant sent by Dr. Gimlette from Kelantan, was abundant. Shortly after crossing a small river, we found a bank covered with the Maidenhair fern *Adiantum lunulatum*, undoubtedly wild here, as there were no houses within a reasonable distance, and just as we came to the Perak river by Kuala Temengoh, one of the men found the first flower of the *Rafflesia* that I had ever seen fully opened and in good condition. It was bright red with raised whitish blotches, about eighteen inches across and exhaling a faint scent like that of *Amorphophallus*.

We stopped the night at the resthouse at Kuala Temengoh, a most picturesque spot with the two rivers meeting, and wooded hills on either side. Indian corn grew well in the sandy ground round the house, and we enjoyed a meal of it. The resthouse is a bamboo structure, unfurnished, overlooking the junction of the two rivers.

Early next morning July 8 we left for our walk to Temengoh and arrived there at about half past one, the elephants which started later getting there at about a quarter past three. The distance is about fourteen miles, a pleasant walk along the river bank, and on the way we found two species of *Begonia*, one with lanceolate leaves deep purple, plain or spotted with white, and small pink flowers; the other with plain green leaves and larger white flowers: *B. isoptera*, Dryand. was common all over this country also. A pretty *Biophytum* with white flowers and *Gastrochilus bilobus* with its fragrant white flowers also ornamented the banks. In the open fields cleared by old cultivation the big grass *Anthistiria gigantea* seemed to have largely replaced the Lalang which is so characteristic of such spots further south. The Lalang, it is true, did occur but was not very plentiful. The elephants seemed to appreciate the *Anthistiria* pulling it up by the roots and beating it against their legs before eating it. The track along the river was a good one where it had not been pounded about by the elephants for which in parts side tracks had been made, but the places where the beasts had stepped were full of holes containing foul water which never escaped. In one of these elephants' foot print puddles we on one occasion found a large water scorpion (*Belostoma*).

The house at Temengoh was a bamboo hut of fairly large size near the river bank and standing in old village ground with Limes, Guavas, Durians, and Sentol trees, growing around. Near the river bank was a very fine Kapayung tree, *Pangium edule*, Bl., bearing its curious fruits.

Our arrival at the village seemed to cause some alarm, and the children refused to go to the school which was near the resthouse unless personally conducted by adults, nor were the adults much less nervous. There were a good many Semangs about and we constantly came to camps from which they had fled at our approach. On one of our walks through the ricefields Amat the plant collector and I met a Semang with a little child on the path. He stopped dead at the sight of us some forty yards away. We turned off the path to cross the fields and he began to sing, or utter some invocation in a very loud voice till he had passed the spot we had turned off when he broke into a run as hard as he could go yelling at the top of his voice. We managed to get several however to the resthouse where the other members of the party collected their language. We asked them what became of the dead, good and bad; one said the good went down stream, the bad up stream, asked who made the world they were quite unable to understand the question, apparently they did not see any reason why anyone should make it. They seemed to know nothing of any deities or spirits (hantus) and feared only the tiger, elephant, and falling trees, and apparently lightning. In camp on June 21, three men out of a travelling band of fifteen came to my hut, the others made a detour to avoid us. They had been further into the forest to visit another set who had some plantations, and were returning to Temengoh with food. Two were young fellows and one an old bald man with a single tuft of hair on his head, father of one of the younger ones. They had some sweet potatoes and a kind of travelling ration in the form of a cylinder of pounded tapioca made in a bamboo and looking like a pale colored German sausage. I tasted it and found it very uninteresting stuff, tasteless and woody. They are monogamous and seem prolific as the old man had eight children.

Amat and I made excursions every day into the woods as far as possible and collected vigorously. The leeches were very troublesome, and extremely abundant, eventually several of the bites on my legs got poisoned and I was only able to walk with difficulty and much pain. There was much diarrhoea and fever also among the expedition. The latter was perhaps due to mica in the water which boiling did not get rid of. It would have been well to have filtered it also if possible. The whole of this region appears to be somewhat unhealthy. These ailments interfered considerably with collecting but we managed to get as good a series of the plants of the region as could have been expected. All the elephants of the country being required for the travels of Messrs. Birch and Berkeley we were unable to push as far as had been intended, there being no other means of transport. However we succeeded in obtaining the services of two coolies on one occasion, and with the help of some of the Dyaks, I, my boy, and Amat pushed up a day's march along the river but about midday it began to pour furiously with rain and having come to an old camping ground on the river bank, and the men being quite tired and all drenched, we stopped there and pitched camp in a furious down-pour. We had one or two water-proof cloths to make the hut with, but enlarged it by the use of the leafy stems of a ginger (*Hornstedtia*), the only thing we could find at all suitable, and after some trouble got the roof water proof. There being no rattans here we used the bast of the Dedaup (*Bauhinia integrifolia*) for tying. We stopped here for six days, the Dyaks and coolies returning the second day, leaving Amat, my boy and myself alone. We collected as hard as we were able, pushing as far from camp as we could, but both of us were really too ill to do as much as we might have done. The best collecting was, as usual in these forests, along the banks of the river, which entailed wading the whole or nearly the whole time up the stony bed of a rapid stream, which was pretty hard work, as I was still very unwell and lame. Messrs Robinson and Kloss managed to get the loan of an elephant from the Menkong of the village to fetch me back to Temengoh. It arrived overnight and I rode back on it on June 27. By this time four bamboo rafts had been made for our return and we started in these for Kuala Temengoh on the 28th. There were few rapids on this part of the journey, the first being called "Darat," as an Anak Darat (a chief's daughter) was said to have been drowned here by the oversetting of a raft. It was a pleasant mode of travelling and very picturesque. Near Kuala Temengoh we saw fresh tracks of a herd of wild elephants. Stopped at one place by the blocking of the stream with an old raft, we had an opportunity of collecting the pretty orchid *Dendrobium hercoglossum* in full flower and some other plants. We arrived at Kuala Temengoh about midday. One of the men was very ill with fever and in a serious state. We eventually got him to the hospital at Grit where he died in a few days. In the afternoon Amat and I rambled round Kuala Temengoh and collected. Next day the rafts which had been enlarged and improved by the addition of a roof to keep off the sun and by fixing steering paddles at each end, started down the Perak river: the old man on our raft which went first hurled a quid of betel to the spirits of the river with an invocation as we entered the narrow water between the low black rocks which flank the stream. Mr. Birch has recently given in the journal an account of his passage through the falls on this route so there is no need for me to redescribe it. We got through without mishap of any kind. Shortly after we had started one of the coolies announced that he had seen the two elephants bringing up the remainder of our baggage left behind at Grit three weeks previously, in the village at Kuala Temengoh. By this time they had started for Temengoh, a quite useless journey now. As it had been considered unsafe to transmit our collections by raft to Grit, we had left them under charge of some of the Dyaks in the hope that we might procure elephants at Grit and bring them overland. No elephants however were procurable and eventually the collections came down safely by raft. We stopped once or twice on the way down to collect plants and to lunch, but these rocks were surprisingly barren of anything but common weeds. The only rare plant we got was the curious creamy yellow flowered *Crotalaria chinensis ;* This seems to be the only recorded locality for this plant in the Peninsula: at one spot the rocks were bright with some pink flower, and we stopped to see what it was, when it proved to be the common pink *Celosia argentea*, an ordinary waste ground plant. Here and there on the rocks were to be seen scarlet patches, occasionally partly bright yellow, which so resembled Chinese lettering that at first I thought they had been painted there by Chinese as a charm but they proved to be patches of a scarlet alga. Deer were said to be frequently seen on these rocks but we saw none, the only animals seen on the way were some common monkeys, and an otter swimming across the stream. All went well till we got beyond the rocks and to the broad part of the river when a deluge of rain came on and we had to stop for a time. Eventually it ceased and we arrived at Kuala Kenering in the evening. Here we left the baggage in a house with the men till next day, and ourselves proceeded to walk to Grit, 2½ miles. We returned to Kuala Kangsar by gharry, the baggage travelling by oxcart. We spent one night at Lenggong, where the plant collector who had arrived previously made an excellent haul of plants from the limestone hills, and the bird collectors secured the lovely ant-thrush *Pitta boschii.* The full moon was most brilliant that night, and the wa-was (*Hylobates*) seemed to appreciate it, for they kept up a continual chorus from both sides of the valley throughout the night. We drove from Lenggong to Kuala Kangsar 35 miles in 4 hours and 40 minutes with the same ponies which had brought us from Grit, and then returned to Thaiping.

The management of the expedition was effected by Mr. Robinson and Mr. Kloss to whom I am much indebted for their invitation to join the expedition and much assistance during the trip.

ZOOLOGY OF TEMENGOH.

By H. C. Robinson.

The following species of birds were collected.

Gallus gallus, Linn.
Argusianus argus, Linn.
Osmotreron vernans, Linn.
Macropygia ruficeps, Temm.
Chalcophaps indica, Linn.
Astur trivirgatus, Temm.
Spizaetus alboniger, Blyth.
Microhierax fringillarius, Drap.
Psittinus incertus, Shaw.
Loriculus galgulus, Linn.
Eurystomus orientalis, Linn.
Alcedo meninting, Horsf.
Ceyx tridactyla, Pall.
Halcyon smyrnensis, Linn.
Halcyon concretus, Temm.
Anthracoceros convexus, Temm
Melittophagus swinhoii, Hume
Nyctiornis amicta, Temm.
Caprimulgus ambiguus, Hartert.
Chaetura gigantea, Temm.
Macropteryx comata, Temm.
Pyrotrogon neglectus, Forbes and Robinson.
Pyrotrogon kasumba, Raffles.
Pyrotrogon erythrocephalus, Gould.
Pyrotrogon duvauceli, Temm.
Pyrotrogon orescius, Gould.
Surniculus lugubris, Horsf.
Hierococcyx nisicolor, Hodgs.
Cuculus micropterus, Gould.
Cacomantis merulinus, Scop.
Chalcococcyx zanthorhynchus, Horsf.
Centropus sinensis, Steph.
Rhopodytes tristis, Less.
Zanclostomus javanicus, Horsf.
Urococcyx erythrognathus, Hartl.
Calorhamphus hayi, J. E. Grey.
Chotorhea mystacophanes, Temm.
Mesobucco duvauceli, Less.
Zantholaema haematocephala, P. & S. Mull.
Gecinus observandus, Hartert.
Gauropicoides rafflesi, Vig.
Gecinulus viridis, Blyth.
Pyrrhopicus porphyromelas, Boie.
Miglyptes grammithorax, Malh.
Miglyptes tukki, Less.
Micropternus brachyurus, Veiill.

Chrysophlegma malaccense, Lath.
Chrysophlegma humii, Hargitt.
Hemicercus sordidus, Eyton.
Alophonerpes pulverulentus, Temm.
Casia everetti, Hargitt.
Calyptomena viridis, Raffles.
Cerilophus rothschildi, Hartert.
Eurylaemus javanicus, Horsf.
Eurylaemus ochromelas, Raffles
Corydon sumatranus, Raffles.
Cymborhynchus malaccensis, Salvad.
Eucichla boschii, Mull. and Schleg.
Cyornis tickelliae, Blyth.
Erythromyias muelleri, Blyth.
Hypothymis azurea, Bodd.
Rhipidura perlata, S. Mull.
Terpsiphone affinis, Blyth.
Philentoma velatum, Temm.
Philentoma pyrrhopterum, Temm.
Culicicapa ceylonensis, Swains.
Abrornis schwaneri, Temm.
Ctoparola thalassinoides, Cab.
Artamides sumatrensis, S. Mull.
Volvocivora neglecta, Hume.
Pericrocotus flammifer, Hume.
Pericrocotus igneus, Blyth.
Aegithina viridissima, Bp.
Aegithina tiphia, Linn.
Aethorhynchus lafresnayei, Hartl.
Chloropsis zosterops, Vig.
Chloropsis icterocephala, Less.
Chloropsis cyanopogon, Temm.
Irena cyanea Begbie.
Hemixus malaccensis, Blyth.
Iole olivacea, Blyth.
Microtarsus melanoleucus, Eyton.
Microtarsus melanocephalus, Gm.
Criniger tephrogenys, Jard. and Selby.
Alophoixus phaeocephalus, Hartl.
Tricholestes criniger, Blyth.
Trachycomus ochrocephalus, Gm.
Pycnonotus finlaysoni, Strickl.
Pycnonotus simplex, Salvad.
Pycnonotus salvadorii, Sharpe.
Otocompsa flaviventris, Tickell.
Rubigula cyaniventris, Blyth.
Rubigula weberi, Hume.
Pomatorhinus borneensis, Cab.
Pellorneum subochraceum, Swinh.
Turdinus olivaceus, Strickl.
Drymocataphus nigricapitatus Eytob.
Alcippe cinerea, Blyth.
Stachyris poliocephala, Temm.
Stachyris maculata, Temm.

Cyanoderma erythropterum, Blyth.
Mixornis gularis, Raffles.
Herpornis zantholeuca, Hodgs.
Hydrocichla ruficapilla, Temm.
Cittocincla macrura, Gm.
Orthotomus ruficeps, Less
Franklinia rafescens, Blyth.
Hemipus obscurus, Horsf.
Hemipus picatus, Sykes.
Tephrodornis gularss, Raffles,
Platylophus ardesiacus, Cab.
Melanochlora flavocristata, Lafr.
Dendrophila saturatior, Hartert
Corvus macrorhynchus, Wagl.
Oriolus zanthonotus, Horsf.
Eulabes javanensis Osbeck.
Muniaa cuticauda, Hodgs.
Aethopyga temmincki, Horsf.
Anthothreptes hypogramica, S. Mull.
Anthothreptes rhodolaema, Sheley.
Anthothreptes simplex, S. Mull.
Chalcoparia phænicotis, Gm.
Arachnothera modesta, Eton.
Arachnothera chrysogenys, Temm.
Munia Cencogastra Hodgs.
Prionochilus thoracicus, Temm.

The Mammals obtained at Temengoh were :—

Viverra zibetha.
Cervulus grandicornis, Lydekker.
Tragulus ravus, Miller.
Sus jubatus, Miller.
Ratufa melanopepla, Miller.
Sciurus hippurus, Is. Geoffr.
Sciurus prevosti humei, Bonh.
Sciurus concolor, Blyth.
Sciurus vittatus miniatus, Miller.
Sciurus tenuis, Horsf.
Sciurus robinsoni, Bonh.
Mus validus, Miller.
Mus surifer, Miller.
Mus asper, Miller.
Mus cremoriventer, Miller.
Mus sp.
Mus jalorensis, Bonh.
Megaderma spasma trifolium, Geoffr.
Tupaia ferruginea, Raffles.
Tupaia malaccana, Anderson.

With the exception of two or three of the commoner squirrels, mammals were exceedingly scarce in this locality, monkeys particularily so. One gibbon was shot but fell into the river and could not be retrieved. Kijang, pig and the smaller variety of mouse deer were fairly common but trapping proved unproductive though one species of rat of the *muelleri* group, certainly new to the peninsula was secured.

No species of very special interest are included in this list, which serves to show that with very unimportant exceptions the fauna of the Temengoh valley is the same as that of the rest of Perak. It may be noted, however, that several species, which in Batang Padang and Selangor are rarely met with below 3000 feet occur at altitudes which do not exceed 1000 feet, a fact which may be due to the immediate proximity of large and lofty mountain masses. Such species are

Pyrotrogon erythrocephalus
Hemipus picatus
Otocompsa flaviventris
Serilophus rothschildi

Anthothreptes rhodolaema takes the place of the commoner *A. malaccensis* as has recently been found to be the case in the more northerly state of Trang. The yellow headed *Chloropsis* is however, *C. icterocephala* and not *C. chlorocephala* and the small barbet *Mesobucco*, though not typical *M. duvauceli*, the southern form, appears to be nearer to that race than to *M. cyanotis* of the northern states. The woodpecker *Gecinulus viridis* usually rather rare in Perak, though it occurs sparingly on the main range as far south as southern Selangor, whereever there is much bamboo, was not uncommon in Temengoh.

THE FLORA OF THE TEMENGOH DISTRICT.

The plants collected in this expedition were for the most part gathered in the immediate neighbourhood of Ulu Temengoh, round the village of that name on the banks of the Temengoh river, and on the track between Ulu Temengoh and Kuala Temengoh where the Temengoh and Perak rivers join. Others were obtained on the route from Grit to Kuala Temengoh, and at Grit itself. On the return journey additions were made to the collections along the banks of the Perak river on the rocks of the Perak river and at Kuala Kenering, near Grit, and the plant collector put in a few hours at Lenggong where the limestone rocks rich in the calcareous flora gave a good harvest. This district had never been previously submitted to botanical investigation except that Mr. L. Wray had obtained some plants at Kuala Kenering and near Kuala Temengoh, and had botanised on the Plus river, at no great distance from the Temengoh river.

The region after leaving the village of Grit was as usual a succession of forest-clad-hills, of no great altitude, and the track ran mainly along the Temengoh river, giving a succession of charming views. The soil in all this region was somewhat sandy which was perhaps the cause of the comparative scantiness of the flora, and many of the hills were clad in a bamboo forest which is most unsatisfactory for the botanist as this form of jungle like that of the Bertam forests (also not uncommon here,) is almost bare of any undergrowth flora, a few selaginellas and a Sonerila or two being the only plants in these dry spots. The cleared land round the Temengoh village produced the usual characteristic Malay campong flora, but with additions of plants less common in the south. Beneath the fruit trees grew abundantly *Phrynium Jagoranum* with its prettily striped leaves, and *Tacca vespertilio*, the curious fern *Hemionitis* and some other plants unusual to find in the Campong orchards.

The river where rocky produced several plants which I had previously met with far up the Pahang river, such as *Hygrophila saxatilis*, *Pentasacme caudata*, *Ixora stricta* narrow leaved variety, *Nauclea purpurascens* and other narrow leaved plants characteristic of the mountain torrent streams.

Conspicuous trees in the forests by the rivers were *Lagerstroemia floribunda*, *Pangium cedule*, and the beautiful *Englehardtia* reminding one of an ash tree. *Millettia decipiens* with its white flowers, was also conspicuous.

In some parts of the forest, especially near old Semang clearings, were dense thickets of *Phaeomeria imperialis*, the cultivated variety with a white not yellow edge to the lip. It grew sometimes in immense abundance mixed with *Hornstedtia megalochilus* and *Amomum uliginosum*, and is no doubt introduced, being cultivated for its edible flower buds and fruits. *Zingiber spectabile* was very abundant and in splendid flower. In the more open woods *Didymocarpi* were poorly represented though what species there were were abundant. Among herbaceous plants the *Acanthaceae* were most abundant, and conspicuous. The sandy woods seemed to suit these plants very well. The most striking was a fine *Strobilanthes* with violet flowers. Orchids and indeed epiphytes generally were conspicuously scanty, in most of the woods and along the river bank. Perhaps the country was apt to get too dry for them. Palms too were by no means as abundant as one usually finds them in hillwoods, and did not as usual form an important feature in the landscape.

I expected to find so far north the ricefield flora of the northern part of the peninsula but the rice cultivators had come from the south, and with them had come the southern ricefield weeds. The fields were often edged with the Willow *Salix tetrasperma*. As this is often used further south as a kind of hedging or fence for the fields it may owe its abundance in such spots to introduction.

Near the village the little river known as Sungei Kertai runs into the Temengoh river and on one occasion the plant collector and I waded as far up the river or walked along the banks as was possible in the day. The flora here was rather richer than along the Temengoh woods and the trees on the river bank and on the islets were more abundantly weeded with epiphytes. *Coelogyne aspera* was abundant here and in flower. It is a very widely distributed orchid over this region and in Sumatra, where I have seen in the river woods of Siak immense abundance, the clumps being so large that it was difficult to find any small enough for our dug-out to carry. Along the Kertai too we found the pretty *Leea simplicifolia* with its large leaves purple beneath, a most unvine-like tree vine.

Rafflesia we found in flower in the woods at Kuala Temengoh and at the upper camp at Ulu Temengoh. I had never seen fully opened flowers of any species of *Rafflesia* before, though it appears to be common in some parts of Perak, the Malays collecting it for medicine. It is a most wonderful object with its bright red petals ornamented with irregular raised white bosses. The scent was not strong, a faint odour of *Amophophallus*, something like a decaying animal. Only two flowers were seen.

From the Ulu Temengoh village I and Amat with a few carriers went a day further into the forest and camped for a few days in the hopes of finding a fresh type of flora, but there was little difference. The best collecting was done by wading up the river. There was very little to be found in the inner parts of the forest but the river edge was much more productive. The work of wading up these gravelly and stony rivers with a strong current is hard, but it is the most productive way of botanizing as these are more trees and shrubs in flower, overhanging the water. On the return journey we collected and examined the rocks of the Perak river below Kuala Temengoh, which however were very barren. The flora consists of many common weeds. *Merremia hastata Celosia cristata*, some common grasses and other weeds, *Utricularia bifida*, etc. The most interesting plants were *Crotalaria chinensis*, apparently its only known locality in the peninsula, and *Melothria heterophylla*, a weedy cucurbit.

The most important discovery during the trip was a new species of the curious genus *Stichoneuron*, one of the *Roxburghiaceae*. The only species hitherto known is Himalayan, and this one is very distinct. The fruit of the genus has never been seen, though the type plant seems to be by no means rare in India. We were equally unsuccessful with the Temengoh species, abundant though it was on sandy banks by the Temengoh river.

The flora on the whole had the greatest affinity with that of Penang and the northern part of the peninsula while the river bank plants were more allied to those of Pahang on the East coast.

Among the new species there was noticed to be a tendency to increased hairiness, notably in *Costus velutinus* and *Cyrtandra barbata* and *rotundifolia*, *Didymocarpus crinita* was silkier than usual and *D. bombycinum* an allied species is also a hairy silky plant. The tendency may perhaps be connected with the sandy nature of the soil rendering it dryer than in most woods in dry weather.

In the list of plants which follows I have inserted a revision of the Melastomaceous section *Oxysporeae* which seem to have been much confused.

LIST OF PLANTS.

RANUNCULACEAE.

Naravelia laurifolia, Wall. At Grit and Temengoh, common, very fragrant, Distrib. North of the Peninsula.

DILLENIACEAE.

Delima sarmentosa, L. Common at Grit and Ulu Temengoh in open country.

Dillenia ovata, Wall. Tree, woods on the borders of the river Temengoh. Flowers, yellow.

D. indica, L. A variety with smaller flowers than usual, Banks of Temengoh river. Flowers white.

Acrotrema costata, Wall. Between Grit and Temengoh and at Ulu Temengoh.

ANONACEAE.

Ellipeia nervosa, Hook. fil. Ulu Temengoh.

Uvaria purpurea, Bl. Fallen flowers seen, Temengoh woods.

Unona dasymaschala, Bl. Temengoh woods.

U. Wrayi, Hemsll. Lenggong.

U. crinita, Hook. fil. Lenggong, and Ulu Temangoh.

Anaxagorea Scortechinii, King. Kuala Kenering.

The absence of the three inner petals, and the presence of numerous staminodes close to the pistils, makes this plant very distinct from any other species. Except for the peculiar fruit it would be better to make it a separate genus.

Goniothalamus tenuifolius, King. Dark woods by a stream. Ulu Temengoh, a shrub.

G. Ridleyi, King. Upper camp, Temengoh. It occurs in forests in Singapore, Malacca and the Dindings.

G. Scortechinii, King. Sungei Kertai, apparently confined to Perak.

Mitrephora reticulata, Hook. fil. A medium size tree very common in dense forest at Ulu Temengoh. Flowers pale lavender.

M. macrophylla, River. Common Temengoh woods, and a nearly glabrous variety at Lenggong.

Miliusa amplexicaulis, Ridl. At Lenggong, only previously known from the Lankawi islands.

MENISPERMACEAE.

Pericampylus incanus, Miers. Hedges and borders of woods. Ulu Temengoh.

CAPPARIDEAE.

Crataeva hygrophila, Kurz. A fairly large tree on islands on Kertai river. Temengoh, in fruit.

This plant I also collected many years ago on the Pahang river. The fruit is pale fawn color, large and round, the seeds flat with short processes on the edge.

I believe this is what Kurz. intended by his description, but I have not seen any type specimen nor his figure.

VIOLACEAE.

Alsodeia Wallichiana, Hook. fil. Lenggong.

A. Kunstleriana, King. Lenggong.

BIXINEAE.

Pangium edule, Bl. Very few large trees of the Kapayung, grew on the bank of the Temengoh River at Ulu Temengoh. They bore fruit.

Flacourtia Rukam, var. Ulu Temengoh near the village.

The *Flacourtias* known here as *Rukam*, seem to be in a very confused state botanically, and require more study from the living plants. Most of those in this region are only known in a cultivated or semicultivated state. They can be separated into two groups according to whether the styles are separated to the base or whether they are connate, with little more than the stigmas free. Three species are recorded from the Malay peninsula, viz., *F. Rukam*, Zoll. Mor., *F. inermis*, Roxb., and *F. Cataphracta*, Bl.

The first of these has free styles, the other two connate styles.

F. Rukam, Zoll. is described as an unarmed tree, but this, if my identification is correct, is not always the case. There seem however to be several forms of it. In one form the leaves are small and the tree is quite unarmed. The fruit has 6 to 8 styles quite free and widely separate on a flat top to the fruit. This is the species mentioned above and I have only seen it in villages. A specimen sent to Dr. King many years ago was named *F. Roxburghii*, but I cannot find this name taken up anywhere. Another form is a straggling thorny tree with large leaves, and is the only really wild species in the peninsula, inhabiting damp forests.

This form of *F. Rukam*, has large elliptic cuspidate leaves, 6-7 inches long 2½ inches wide, the cusp an inch long. The margin of the leaf strongly crenulate, and altogether glabrous. The flowers are unisexual in small tufts but more numerous than in *F. cataphracta*. The pedicels are pubescent. Sepals and disc as in *F. cataphracta*. The sepals ovate obtuse pubescent. Stamens numerous. In the female the styles are separate stout and spreading. The fruit is rather larger, and the styles slender quite separate and remote on the flattened top.

This plant is common in the Singapore woods at Chua Chu Kang, Bukit Timah (8398), Kranji (6388), Stagmount (14144), Changi (3603.) Also I have met with it in Johor at Tebing Tinggi and Kuala Sembrong (Kelsall.)

A very similar plant with fewer nerves and more glabrous flowers was collected by Dr. Haviland (973) at Kuching It also occurs at in Perak at Tapa (Wray 1329); Pekan, Goping in Perak (Kunstler 4718); Penang (Curtis 1566). Another form has usually smaller leaves and is pubescent on the branches petioles and veins on the back of the leaf, and this I have only seen in villages. I have it from a cultivated plant quite thornless (11366, 468); Perak, Thaiping (Wray 2399, Kunstler 2858); Krian, (Wray) and Simpang, (Wray 2041); Malacca, Ayer Bumban (Cantley), Bukit Bruang (R. Derry 1200), and this is the Temengoh plant.

These two forms may not be even varietally different, but are I think worth noting.

F. inermis, Roxb., has hermaphrodite flowers, no thorns and an acid fruit, Jack records it and describes it from Penang. The styles are free. A plant with rather thin large leaves from the Penang gardens collected by Mr. Curtis and by him named *F. inermis*, has the styles connate something like those of *F. Calaphracta*, but it is not that species. I have only seen fruit of it.

F. Cataphracta, Bl. Is a thorny tree with branched thorns on the trunk and straight species on the young-shoots from the stool. The branches are not spiny, and trees can often be met with few or no spines anywhere. The leaves are small, lanceolate acuminate with entire edges or more often shortly crenulate denticulate dark shining green, red when first appearing. The flowers are unisexual in small axillary tufts.

They have small imbricate sepals, hairy on the edge, ovategreen. The males have a number of yellow stamens surrounded at the base by a yellow ring shaped disc. The female flowers have sepals and disc as in the male, but instead of the stamens a flask shaped pistil, the style cylindric red stout, and 4 connate styles, free only at the tip, with capitate stigmas. The fruit is globose and about as big as a twelve-bore bullet, dark brown red, the colour of a red gooseberry with a quantity of greenish yellow pulp surrounded 4 or 5 flat seeds.

This is the best of the eating Rukams. The fruit when gathered is very astringent and firm in texture, but after rolling it about in the hands it becomes soft and sweet, all astringency disappearing. It occurs in villages all over the peninsula.

TERNSTROEMIACEAE.

Sarauja nudiflora, De C. Temengoh.

S. tristyla, De C. Ulu Temengoh.

DIPTEROCARPEAE.

Scarce in this region.

Shorea leprosula, Miqu. Common in Ulu Temengoh woods.

MALVACEAE.

Sida carpinifolia, L. Village weed, Ulu Temengoh.

Urena lobata var, *sinuata*. Common at Ulu Temengoh.

Hibiscus floccosus, Mart. On the road to Grit. A tall tree in flower.

H. tiliaceus, L. Common in the village at Ulu Temengoh, and used for fencing. It is not usual to find it so far inland and it may have been introduced.

STERCULIACEAE.

Sterculia fulgens, Wall. A handsome tree fairly tall with red flowers, nearly leafless in flower. Ulu Temengoh woods by the ricefields.

Helicteres hirsuta, Lour. Kota Tampun and Temengoh.

Melochia corchorifolia, L. Rocks at Kuala Temengoh.

Abroma angusta, L. Ulu Temengoh.

Buttneria elegans, n. sp.

An extensive but slender climber, young parts of the stem pubescent. Leaves alternate ovate cordate obtusely acuminate, lobes rounded half an inch long above glabrous, beneath shortly hairy on the nerves and nervules, 4 inches long and three inches wide or smaller; petiole pubescent, 4 inches long. Panicles axillary solitary or in pairs on slender pedicels, half to one inch long. Flowers numerous small red and yellow, in numerous small cymes, all pubescent. Bracts small lanceolate pubescent. Sepals 5 lanceolate acute pubescent outside and in with stellulate hairs. Petals shorter base linear, apex 3-lobed, lateral lobes incurved rounded, midlobe irregularly rounded with four small teeth and a linear obtuse fleshy curved horn on the back. Staminodes oblong retuse as long as the stamens. Stamens, anthers elliptic ovary hemispheric. Capsule globose ¾ inch long, densely armed with straight slender spines half an inch or less long.

Temengoh islands in the river and at Kuala Kenering, scrambling over bushes, also collected by me at Kuala Tembeling in Pahang in 1891, (No. 2569 of my collections.)

This species is allied closely to *B. aspera* Colebr. a native of Indo-China and the Andamans, but differs in its smaller stems, and leaves more hairy on the back and deeply cordate, and the more slender panicles.

It was distributed in my Pahang collections but seems to have been overlooked in the Materials.

TILIACEAE.

Columbia integrifolia, n. sp.

A tree about 30 feet tall, the branches and young parts velvety with stellately arranged hairs. Leaves oblong somewhat abruptly shortly acuminate, the base very unequally lobed, one lobe rounded half an inch longer than the other, nerves 2 on one side, 1 on the other side of the midrib, nervules prominent beneath, above sprinkled with stellately arranged hairs, beneath thickly velvety. length 6 inches, width 3 inches; petiole half an inch long. Panicle terminal, with branches in the axils of the upper leaves, large spreading 7 inches long, grey velvety. Flowers in compact cymes on short branchlets, with ovate boat shaped blunt bracts, grey hairy, outside $\frac{1}{8}$ inch long. Flowers half an inch across. Sepals linear oblong obtuse hairy outside. Petals lanceolate oblong subacute, as long. Stamens very numerous on a low silky hairy disc, anthers elliptic, ovary, obscurely 3 angled silky hairy. Style subulate hairy. Fruit not seen.

Lenggong. The addition of the genus *Columbia* to our flora was to be expected as it occurs in Cochin-China, Siam and Burma and the Philippines. This species is distinct in the entire very oblique leaves.

Triumfetta suffruticosa, Bl.

A large bush in sandy spots near the Temengoh river, the leaves are rather narrower than usual. In fruit.

A new record for the peninsula. It occurs in Borneo and Christmas Island.

GERANIACEAE.

Biophytum adiantoides, Wight. On the banks by the Temengoh river, in dry spots and on rocks. Flowers white.

Impatiens Scortechinii, Hook. fil. Limestone rocks at Lenggong.

I sp. near *Griffithii*. A single plant on a sand bank opposite the upper camp. Sir Joseph Hooker writes "No doubt near *Griffithii*, but the leaves are spinously toothed and more or less hairy. The flower very small and stem unusually long and slender." The flower when alive was about as big as *Griffithii* usually is and of the same pink colour.

RUTACEAE.

Micromelum pubescens, Bl. Temengoh.

SIMARUBEAE.

Brucea sumatrana, Roxb. Common at Grit and Ulu Temengoh.

Eurycoma longifolia, Jack. Woods, Ulu Temengoh.

MELIACEAE.

Aglaia argentea, Bl. A fairly large tree by the river bank, Ulu Temengoh.

A. odoratissima, Bl. In fruit, Temengoh.

A. cordata, Heirn. Temengoh.

OLACINEAE.

Cardiopteris lobata, Wall. Temengoh.

Gomphandra penangiana, Wall. The form with large elongate fruit, at Temengoh. I have it also from Waterloo estate collected by Curtis. The ordinary form has ovoid fruit about half as large.

Ochanostachys amentacea, Bl. Trees seen in the woods in several places.

CELASTRINEAE.

Salacia flavesceus, Kurz. Temengoh woods.

AMPELIDEAE.

Vitis macrostachya, Miq. Sungei Kertai, hanging over the river.

V. lanceolaria, Wall. Common on trees by the Temengoh river.

V. glaberrima, Wall. Ulu Temengoh.

V. repens, W. and A. Ulu Temengoh.

Leea simplicifolia, Zoll. A low shrub with large simple leaves deep purple beneath, quite handsome. Damp woods, Sungei Kertai.

L. gigantea, Griff. Common at Ulu Temengoh in open country.

L. Curtisii, King. Lenggong.

L. angulata, Korth. Kuala Temengoh.

SAPINDACEAE.

Cardiospermum Halicacabum, L. Kuala Temengoh.

Xerospermum Wallichii, King. Temengoh woods.

Paranephelium macrophyllum, King. Common along the river banks, and very conspicuous from its bright red young leaves. The flowers on the Ulu Temengoh plant were quite white, they are usually pink.

ANACARDIACEAE.

Buchanania sessiliflora, Bl. Woods at Ulu Temengoh.

Spondias dulcis, var *acida*. At Grit.

Dracontomelum mangiferum, Bl. A big tree on sandy spots near the river Ulu Temengoh in fruit.

CONNARACEAE.

Connarus semidecandrus, Jack. Bushes at the village, Ulu Temengoh and at Grit in unripe fruit.

Rourea rugosa, Planch. Temengoh open country.

LEGUMINOSAE.

Crotalaria chinensis, L. On the rocks at Kuala Temengoh, also gathered there by Wray.

C. verrucosa, L. Sandy spots by the Temengoh river, out of flower.

Flemingia strobilifera, R. Br. Open places Temengoh village.

F. congesta, Roxb. Common in the same locality.

Vigna vexillata, Benth. Kuala Temengoh.

Though omitted from the Materials, this is a common plant on sand banks and dry spots by rivers. Its flowers are light yellow.

Mucuna biplicata, Teysm. Ulu Temengoh, scrambling on trees by the ricefields, etc.

Sesbania aculeata, Poir. Temengoh in ricefields.

Millettia atropurpurea, Benth. In the forests at Temengoh.

M. decipiens, Prain. A common tree along the river banks, with white flowers.

M. cauliflora, Prain. Lenggong.

The flowers are white $\frac{3}{8}$ inch long, the Calyx cupshaped covered with silky hairs. Standard rounded entire not auricled clawed at base back silky. The vexillary stamen is free for three-fourths of its length.

Previously obtained at Larut by Kunstler but the specimens were imperfect as the corolla had withered.

Pterocarpus indicus, Willd. The angsana is common about the village but whether planted or native I cannot say.

Aeschynomene indica, L. Temengoh by the river.

Uraria crinita, Desc. Temengoh

U. lagopoides, De C. Sandy spots near the Temengoh river.

Desmodium, trifoliastrum, Miq.

I have little doubt that this is the plant intended by Miquel. It was abundant in swamp on the forest by the Temengoh river, and I obtained it also many years ago at Kota Glanggi in Pahang. It was originally described from Java, and is omitted from the Materials. It is a prostrate plant with long slender branched woody stems with appressed hairs in the young parts. The stipules are lanceolate acuminate glabrous brown ribbed and with a long point. Leaflets 3 elliptic obovate 1¼ inch long ¾ inch wide or smaller, the apices rounded, above sprinkled with short hairs, beneath the hairs are more silky and abundant; the petiole an inch longer less. The raceme is terminal 3 inches long erect silky hairy, the flowers 2 or 3, on slender hairy peduncles half an inch long. The flowers are bluish white. Sepals lanceolate acuminate rather long. The corolla small. The pods an inch long, the upper margin straight, the lower edge indented for half the depth of the pod. The joints are usually four, covered with adhesive hairs. It seem nearest to *D. heterophyllum*, De C., but much larger in all its parts.

D. polycarpum, var. Ulu Temengoh.

D ormocarpioides, De C. Flowers pale blue. Woods along the Sungei Kertai in Semang clearings.

Bauhinia integrifolia, Roxb. sp. Abundant all over the woods.

Cassia nodosa, Ham. Fine trees in flower seen on the way to Temengoh.

C. alata, L. Common near the village at Temengoh.

C. timoriensis, De C. Open fields, Ulu Temengoh.

C. Leschenanltiana, De C. Rocks at Kuala Temengoh.

Afzelia palembanica, Bak. Fine trees of Merabau were seen all through the upper Temengoh woods.

Saraca taipengensis, Prain. Temengoh forests.

S. bijuga, Prain. A medium sized straggling tree in fruit. Banks of Temengoh River.

Entada scandens, Benth. Draping the forest edges over the river Temengoh, seen in fruit.

Neptunia oleracea, Lour. Lenggong and Grit in roadside ditches, no doubt cultivated.

Acacia pennata, var *pluricapitata*. Common, Grit and Temengoh.

ROSACEAE.

Pygeum Maingayi, Hook. fil. Temengoh woods.

P. parviflorum, Teysm. A variety with larger and thinner leaves than usual and the racemes short not longer than the petioles. Forests, Temengoh and Sungei Kertai rivers.

Rubus moluccanus, L. Common at Temengoh.

RHIZOPHOREAE.

Carallia lucida, Roxb. Free open country at Temengoh. The entire leaved form. The one with spinulose edges, is rare in the peninsula. I have it from Tanjong Malim in Perak.

MYRTACEAE.

Rhodamnia trinervia, Bl. Open country, Temengoh.

Eugenia densiflora, var *rivalis*. A dense bushy tree, smaller than the ordinary form, with the bark less flaky and red. Leaves narrower four inches long and one inch wide. Panicles dense, petals white $\frac{1}{4}$ inch long.

Common on the Temengoh river banks. This tree looks very different from the large leaved lowland form, but I hardly think it is more than a form.

E. pseudoformosa, King. Lenggong.

E. Curtisii, King. In fruit but apparently this species, Ulu Temengoh.

Barringtonia spicata, Bl. Banks of the river at Ulu Temengoh and Kuala Temengoh.

MELASTOMACEAE.

Melastoma malabathricum, L. Common, Temengoh.

OXYSPORA AND ALLOMORPHIA.

These two genera are undoubtedly closely allied, though the original types of the two viz. *Oxyspora paniculata*, De C. and *Allomorphia exigua*, Bl. are plants of very different appearance. Cogniaux in his monograph of *Melastomaceae* (Decandolle's Prodromus continuation) separates the two genera according to the anthers whether they are all similar as in *Allomorphia* or dissimilar (*Oxyspora*). King in the Materials writes that this character breaks down in two species which he describes, *O. acutangula*, and *O. Curtisii* and modifies the general character of *Oxyspora*, which depends he says on its open paniculate inflorescence and long double fusiform boldly ridged capsules, white *Allomorphia* is characterised by its shortly branched panicles on the ultimate branchlets of which the flowers are collected in pseudo-glomeruli while the capsules are not much longer than broad and are often urn-shaped.

This arrangement seems to me to make matters worse, *e.g.*, *Allomorphia capillaris* has the panicles diffuse and open, with the stamens and fruit of *Allomorphia*, while *A. Curtisii* has everything required for the genus *Allomophia* as originally laid down, except the capsule which is long and ribbed like that of *Oxyspora*. The only really tangible character for *Oxyspora* is the dissimilarity of the anthers, which is usually accompanied by the elongate capsule. But for this it would be better to amalgamate the two genera. Under *Anerincleistus* Dr. King placed two plants with large spreading terminal panicles, though the genus is usually diagnosed by its possessing axillary inflorescences of small size. Of one of these *Anerincleistus floribundus*, King., a common plant on the Taiping hills, I sent many years ago a specimen in to M. Cogniaux who named it *Oxyspora macrophylla* Triana, originally described from Sumatra, and it certainly possesses all the characters of an *Oxyspora*. This genus *Anerincleistus* also as laid down in King's Materials and perhaps too in Cogniaux contains a mixture of very dissimilar plants, and these had better be rearranged also.

OXYSPORA.

The original characteristic of the genus *Oxyspora* was the dissimilarity in the eight stamens, 4 of which were longer and of different shape from the other four, but as there is also another distinctive character in the original species viz, the fusiform capsule, King seems to have disregarded the inequality of the stamens and used the latter character only, adding to the normal *O. stellulata*, *O. acutangula* and *O. Curtisii* both of which have similar stamens. Baillon combined the genus with *Allomorphia*.

I would propose to retain for *Oxyspora* all the species with terminal panicles and eight stamens of which four are distinctly dissimilar from the others.

The following would then be the species of this genus as known to me:—

O. cernua, Triana. Assam.
O. *paniculata*, De C. India.
O. vagans, Wall. Assam.
O. hispida, Ridl. Selangor.
O. microcarpa, Ridl.
O. rosea, Ridl. Pahang.
O. longifolia, Ridl. Sumatra.
O. stellulata, King. Perak.
O. macrophylla, Triana. Sumatra.

Of these the ones with fusiform capsules are *O. cernua*, *O. paniculata*, *O. vagans*, *O. rosea* and *O. stellulata*, King. *O. hispida* and *O. microcarpa* have capsules rather of the nature of those of *Anerincleistus*, and *O. longifolia* Ridl., though in other respects closely allied to *O. rosea*, has exactly the capsules of *Allomorphia exigua*, but the distinctly unequal stamens of *O. rosea*.

O. hispida, n. sp.

Shrub, stems densely covered with processes, reddish cylindric acuminate. Leaves opposite equal ovate acuminate base cordate, the lobes meeting above sprinkled with conic papillae especially on the midrib and margins, beneath paler more densely covered, nerves two pairs, lower pair from the base, the other from the midrib half an inch higher, reticulations elevate on the back, blade 5 inches long 3 inches wide, petiole densely hairy stout, 1½ inch long. Panicle terminal 8 inches long 3 wide, base 1 to 1½ inch wide all covered with conic cylindric hairs, panicle branches short but numerous. Bracts caducous. Flowers with pedicel half an inch long, pedicel as long as the goblet shaped ovaries. Sepals very short triangular indistinct. Petals short ovate acuminate 4 glabrous. Stamens 8 dissimilar, larger ones $\frac{1}{8}$ inch long, cylindric acuminate curved, base prolonged, no dorsal process; smaller ones shorter less curved and only shortly acuminate, all yellow. Style slender long. Capsule urn-shaped covered with conic processes, little over $\frac{1}{8}$ inch long, lobes of operculum in dehiscence large ovate acute dorsally grooved $\frac{1}{2}$ the length of the ovary. Seeds linear sigmoid smooth, pale, with a curved point.

Selangor, Gunong Menkuang Lebar at 5400 feet. (Fred. Dennys.)

A very distinct plant, its indumentum consisting of cylindric acuminate trichomes horn-shaped. The ovary in flower tapers downwards into the pedicel and is something of the shape of that of a typical oxyspora, but in fruit actually urn-shaped.

It is nearest to *O. stellulata*, King and resembles *O. paniculata* De C. in indumentum.

O. rosea Ridl. *Allomorphia rosea*, Ridl. Trans. Linn. Soc. Ser. II. III. 301.

This plant is certainly an *Oxyspora*. It is quite omitted from the Materials by King, as is almost every species described in the above paper. It is a low shrub almost completely glabrous, except for scurfy papillae all over the young parts, stem, petioles, inflorescence and ovary. The leaves are large, 12 to 18 inches long, with a pair of nerves, very slender running along the edge and close to it and rising from the base, a pair of nerves rising from the midrib half an inch from the base and running to the apex, parallel with the outer ones and half an inch from them, the transverse nervules about 22 pairs horizontal raised on both surfaces. The petiole 3 inches long. Panicle 6 to 9 inches long with branches 3 or more inches long. Flowers rosy. Ovary pustular papillose. Sepals very shortly ovate. Petals small ovate. Stamens 8 dissimilar, larger ones curved acuminate, base prolonged, smaller ones nearly straight oblong obtuse, equal at both ends, shortly prolonged at the base. Capsule elongate smooth, the papillae disappearing gradually narrowed to the base ¼ inch long with 8 low ribs.

This was collected by me on the Tahan river in 1891, (No. 2235) and at Bundi in Tringganu by Rostado.

O. longifolia, n. sp.

Glabrous. Leaves elongate lanceolate, long acuminate base obtuse, above minutely punctate, beneath paler, nerves 5 transverse nervules straight over 30 pairs, 9-11 inches long, 2-3 inches wide, petiole 1½ to 2 inches long. Inflorescence sub-terminal 3 inches long, rachis slightly red scurfy, panicle little branched with a few short branches. Flowers small in cymes of 3, ovary longer than broad goblet-shaped glabrous ⅛ inch long. Sepals very short rounded ovate. Petals small oblong ovate. Stamens dissimilar 8, larger ones curved acuminate to the top smaller cylindric, obtuse at both ends, shortly produced below, no dorsal process. Capsule urn-shaped smooth with 8 low distinct ribs, ⅛ inch long.

Sumatra, Kelantan river in Siak (Ridley) 1897.

This is very like *O. rosea*, Ridl., but has totally different fruit.

ALLOMORPHIA.

This genus based on *A. exigua*, Bl., a native of the Malay peninsula, is distinct in its terminal panicle of small flowers with eight similar stamens, a urn-shaped capsule, dehiscing at the apex without large valves erected during dehiscence.

The species I would admit to it are:—

A. exigua, Bl. Malay peninsula.

A. capilaris, Cogniaux, ms. Malay peninsula.

A. porphryanthera Ridl. Malay peninsula.

A. Curtisii, *Oxyspora Curtisii*, King.

Cogniaux gives the following species which I have not seen: *A. longispicata*, Borneo, *A. umbellulata*, Hook. Tenasserim, *A pauciflora*, China, which may belong to the genus, *A. sertulifera*, (*Pomatostoma sertulifera*,) *A. quintuplinervia* (perhaps *Pomatostoma*), *A. longifolia* and *A. Beccariana* probably not *Allomorphia*, and *A. Griffithii*, Hook, and *A. hispida*, Kurz. The former certainly and the latter probably also *Phyllagathis*. *A. multineura* of Borneo possibly the same and the section *Hollrungrophyta* of New Guinea with *pentamerous* flowers may safely be excluded, and *A. ovalifolia*, Tri, of Vitu.

Allomorphia. The type of this is *Allomorphia exigua*, Bl. A tall half shrubby plant with small greenish or white flowers, common in the low country, in shady woods. The leaves are large ovate 10 inches long, 6 inches wide glabrous, the stem is hollow and terete. The panicle 6 inches or more long, much branched terminal with very many small yellowish green or almost white flowers. The ovary at first goblet-shaped with short triangular sepals. Petals small oblong ovate. Stamens equal, little curved cylindric obtuse, base distinctly prolonged. In fruiting the ovary becomes urn-shaped narrowed at the top below the sepaline ring, and has eight raised ribs.

The plant is common in the peninsula, Malacca, at the base of Mt. Ophir, Sungei Hudang (Derry 175), Panchur (Goodenough 1266). Tampin Hill (Goodenough). Selangor, Klang Gates; Sempang, along the Pahang track (Ridley 8619), Sungei Buloh (Goodenough 10603); Rawang (Ridley 7330); Perak, Tapah; Salama, (King's coll. 3106; Kamuning, etc., and Penang (Curtis 399) Wallich 4048).

A. alata, King. (Materials l. c. p. 12) is most nearly allied to *A. exigua* Bl., resembling it in the form and colouring of the flowers and the form of the fruit but the stem and braches are winged with a low thin ridge, and are angled. The rachis of the inflorescence is also winged and angled. It varies in size apparently according to locality. On the banks of the Tapah river, and such localities it is dwarf with smaller leaves. In the forests it is taller with leaves often as big as those of *A. exigua*, but it is not altogether so big a plant.

It occurs in Selangor, Bukit Hitam (Kelsall); Perak, Larut Hills (Ridley 11435, Curtis 2008, 3719, King's coll. 2041); Bujong Malacca (Ridley 9607), Tapah (14101); Telom. Pahang, Kuala Tenok, Tahan river; Kelantan, Kuala Lebir, (Dr. Gimlette); Tomoh (Machado).

A. capillaris, Cogn. mss. *A. exigua* var *minor*, King, Materials.

A low glabrous shrub, with slender branches. Leaves in distant equal pairs lanceolate acuminate with a long point, base slightly cuneate, nerves 5 from the base, glabrous on both surfaces, but midrib above minutely pustular, 5 or 6 inches long, 3 inches wide; petiole 1-2 inches long. Inflorescence panicled on a filiform pendulous peduncle with distant slender branches usually simple, bearing 3 or 4 umbelled flowers, occasionally more widely branched with lateral branches 1-2 inches long and branched again, whole panicle 4 to 6 inches long. Pedicels very short. Ovary $\frac{1}{10}$ inch long. Calyx lobes very short subacute. Petals very small oblong lanceolate acute about half as long as the filaments. Stamens 8 pink, filaments $\frac{1}{10}$ inch long. Anthers larger cylindric gradually and slightly narrowed upwards blunt base shortly prolonged blunt rounded, a small boss on the back at the base. Capsule urn-shaped cylindric, $\frac{1}{8}$ inch long, usually with 8 low ribs.

Penang Hill (Curtis 73), (Ridley 5239); Dindings woods near Bruas (Ridley 8364); Perak, Waterloo estate (Ridley 2946); Temengoh Woods (Ridley).

This plant is somewhat variable, and different forms look often very distinct, this however I believe is rather due to locality than to actual varietal difference. The Penang Hill plant is a short plant with short inflorescences. It grows abundantly on the rocky banks on the road to the waterfall. In the Dindings and Waterloo estate woods the panicle is longer and quite capillary and it was from these specimens that Cogniaux gave his manuscript name. At Temengoh we got two forms in one of which the panicle is much branched with distinct slender capillary branches. It is totally different from *A. exigua*, Bl., and in life the bright rose pink stamens and white petals are so conspicuous that no one would take it for the coarse tall green-flowered *A. exigua*, Bl.

A. porphyranthera, n. sp.

Shrub, branches slender angled dark colored covered with short scabrous red papillae. Leaves opposite equal elliptic, or elliptic lanceolate acuminate above glabrous except for red scurf on the midrib, beneath nerves and nervules red scurfy, 5 inches long, 2 inches wide or less; petiole slender grooved scurfy 1 inch long. Inflorescence terminal 2-2½ inches long, a lax panicle of 5 to 7 branches, 1-1½ inch long with dense cymes of few flowers on the ends, all scurfy. Bracts linear $\frac{1}{10}$ inch long. Ovary longer than broad goblet-shaped scabrid. Calyx lobes triangular acute almost mucronate short. Petals lanceolate acuminate as long as the filaments. Stamens 8 all similar, filaments short, anthers $\frac{3}{16}$ inch long, blue purple, cylindric acuminate straight, base shortly prolonged but no dorsal process. Style filiform, a little longer. Capsule obovoid urn-shaped glabrous with eight ribs. Woods, Ulu Temengoh.

The capsules are subumbellate and much resemble those of *A. exigua* Bl.

A. Curtisii, Ridl. *Oxyspora Curtisii*, King. Materials.

A single specimen of this plant was found by Mr. Curtis on the Hermitage hill in Perak, No. 1300 of his collection. It was referred to *Oxyspora* by King on account of its fusiform fruit. In its herbaceous habit, and the similar stamens resembling those of *Allomorphia*. I should prefer to retain it on that genus. The flowers are larger than in most *Allomorphias* and the stamens rather longer. The fruit however is hardly that of *Oxyspora*. It is not simply goblet shaped, but elongate elliptic narrowed above and below and ribbed ; certainly different in form from any of this section that I know, but rather suggesting a drawn out capsule of *Allomorphia*.

CAMPIMIA N. GEN.

A shrubby plant with a hollow woody stem, leaves opposite equal ovate long petioled. Inflorescence axillary shorter than the leaves, scorpioid, the flowers small on distinct articulations. Calyx tube campanulate hardly lobed, truncate. Petals 4. Stamens 4 equal oblong slightly prolonged below with a linear process at the back running from the keeled connective. Capsule campanulate.

Species 2.

C. Wrayi, Ridl. Native of Perak

C. Scorpioides, Ridl. *Dreissena Scorpioidea*, Ridl. Stapf. Ic. Pl. 2414. Borneo.

King refers the first species to *Allomorphia* from which it markedly differs. Stapf's *Dreissena Scorpioidea* differs from other species of the genus in its scorpioid inflorescence and from *Dreissena* in having only one appendage to the stamens instead of two.

C. Wrayi, Ridl. This plant is peculiar in having the inflorescences axillary as well as terminal. The habit of the plant is somewhat that of *A. exigua*, Bl. The stem more woody and hollow. The leaves ovate to nearly orbicular, with the petioles curiously margined with cylindric acuminate hairs. The panicles are many flowered, sometimes with rather long 2 inch branches, angled as is the upper part of the stem. The small flowers are secund, and the cymes scorpioid, and the flowers on short pedicels on distinct rounded articulations. The petals are nearly as long as the short stamens, ovate. The stamens are 8, all similar, the anthers short oblong blunt at both ends shortly produced below and with a large spathulate linear process from the back from the keeled connective. The capsule I have not seen actually ripe, but nearly ripe ones are cup-shaped short and broad not ribbed nor narrowed at the top as in *Allomorphia*.

A specimen sent to Cogniaux was labelled by him *Octhocharis scorpioidea*, but I can hardly in the face of its possessing 8 stamens with appendages refer it to that genus. It is undoubtedly much nearer to *Dreissena* in its axillary inflorescence and appendaged stamens, *Dreissena* however has two appendages.

PHAULANTHUS N. GEN.

Shrubs, with solid woody stems. Leaves opposite usually equal ovate or lanceolate. Inflorescence not terminal, all axillary shortly peduncled or almost sessile cymes of few flowers. Flowers small. Calyx lobes short 4. Petals 4. Stamens 8 equal and similar bases shortly prolonged with one appendage at the back. Capsule urceolate, dehiscing at the apex with four valves. Seeds obcuneate.

The species included under this were all referred so far as they were described to *Anerincleistus*. But that genus has always terminal as well as axillary flowers in large sized panicles, while in this genus I retain the species with short axillary cymes from the lower part of the stem.

The following are the species I would include.

Ph. Helferi, (*A. Helferi*, Hook. fil). Tenasserim and Pahang.

Ph. Griffithii, Ridl. (not seen). Assam.

Ph. rudis, n. sp. Malay Peninsula.

Ph. glabra, n. sp. Sula.

Ph. stipularis, n. sp. ,,

Ph. Curtisii, Ridl. ,,

Ph. Helferi, *Anerincleistus Helferi*, Hook. fil. Triana. p. 75. *Cogniaux Melastomaceae*, p. 478.

A branched woody shrub, stems solid covered with closely appressed hairs in the young parts. Leaves ovate or ovate lanceolate acuminate base cuneate or obtuse, 7-12 inches long, 3½-6 inches wide, nerves from the base 2 pairs, transverse nervules beneath conspicuous, above sprinkled with rough short hairs, beneath the nerves thickly hairy intervening spaces scabrid hairy. Petiole 1 to 3 inches long, appressed hairy. Inflorescence axillary, flowers in threes on a very short peduncle, pedicel ½ inch or less. Capsules ¼ inch long urceolate narrowed below the calyx limb, which is broad, with 4 subtriangular lobes. All covered with short rough hairs. Calyx smooth within, apex of capsule deeply sunk. Seeds obcuneate apex truncate base narrowed pale, minutely pustulate.

Pahang, Tahan woods and Khol, Pahang River (Ridley 2336). Identified by M. Cogniaux; it fits his description, too, very well. The fruit is pink and I believe baccate and indehiscent. The top of the capsule is flat and disc-like and there are no signs of the valves.

Ph. rudis, n. sp.

A stout woody shrub 6 or 8 feet tall, stems solid over $\frac{1}{4}$ inch through, adult glabrous, young parts covered with long rough hairs. Leaves ovate cordate peltate 8 inches long by 7½ inches wide, apex acuminate, base bilobed with rounded lobes, nerves radiating from the base, 3 pairs, sprinkled with long hairs on both sides, nerves more densely hairy. Petiole 2-3 inches long densely hairy. Inflorescence axillary, an umbell of 4 pink flowers on a very short stout hairy peduncle $\frac{1}{8}$ inch long, pedicels slender ½ an inch. Ovary urn-shaped roughly hairy. Calyx lobes 4 connate with short acute points. Stamens 8, filaments slender long. Anthers curved acuminate all similar, bases slightly prolonged and divaricate, appendage dorsal linear. Capsule urceolate pink covered with long rough hairs $\frac{1}{8}$ inch long, with 4 smooth triangular valves.

Selangor, Ginting Bidai (Ridley 7306) ; Ginting Peras (7305).

Allied to *P. Helferi*, but distinct in its hairiness and ovate peltate leaves.

Ph. stipularis, n. sp.

A shrub with terete stems covered with light brown hairs. Stipules broad orbicular $\frac{1}{4}$ inch long, backs covered with long hairs. Leaves opposite ovate lanceolate or oblanceolate gradually narrowed to the base which is slightly oblique apex acuminate, nerves two pairs, the lowest intramarginal one from the base, the other pair from ½ to 1 inch above the base from the midrib, nervules transverse numerous, above drying black, punctate with numerous scattered hairs dense on the midrib, beneath more hairy, nerves and nervules densely hairy, 5 to 7 inches long 2 inches wide, petiole $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, young leaves entirely golden velvety. Inflorescence in small axillary cymes of 2 or 3 flowers on extremely short peduncles. Pedicels in fruit $\frac{1}{10}$ inch long. Capsule small urceolate covered with short rough hairs valves broad oblong. Flowers not seen.

Tringganu at Bundi (Rostado).

This is very remarkable for the presence of large stipules. The leaves are very variable in shape but are somewhat peculiar in the base running down the petiole.

Ph. Curtisii, Ridl. *Anerincleistus Scortechinii*, King. Materials 425.

A. Curtisii, Stapf, Kew Bull. 1892, 196.

A shrub with lanceolate leaves and minute flowers, usually green on slender short axillary peduncles never terminal. The capsule is quite that of the other species except its being more or less covered with rough bristly hairs. The plant occurs on the Taiping hills from the base to about 3,000 feet elevation; at Bukit Kapayung near Sungei Siput in Perak, and in the Temengoh woods, and also at Tasek in Province Wellesley (not Penang as given in the Materials), Curtis 412. The latter is the type of the species *Curtisii* which only differs from the Taiping Hills form in its greater hairiness. The plant however varies considerably in this point, and some of the Taiping Hills plants are nearly as hairy as those of Province Wellesley. A specimen collected by Curtis at 3,000 feet on the Taiping hills is nearly glabrous on the upper surface of the leaves only the midrib being strigose. Those from the base of the hill, and from Temengoh are more hairy.

ANERINCLEISTUS.

The type of this genus is *A. hirsutus*, Korth. of Sumatra, characterised by its axillary and terminal inflorescence, 8 stamens all similar, and capsule with four oblong valves erect in dehiscence. The species undoubtedly allied to *A. hirsutus* are *A. macranthus*, King, *A. pauciflora*, Ridl.

A. albiflora, Ridl. from Gunong Berembun in Perak, differs in the dehiscence of the capsule which splits entirely into its segments, and possesses very short valves. Cogniaux to Korthals' species added *A. Helferi*, Hook. fil., *A. Griffithii*, Hook. fil., *A. Beccarii* and *A. dispar*. The first two of these have small axillary cymes and no terminal panicle, and I would exclude them. *A. Beccarii*, Cogn., *A. glomeratus*, King, *A. cordatus*, Stapf, though differing in many minor points from Korthals' type may I think be referred to this genus. *A. floribundus* of King is *Oxyspora macrophylla*, Tri. and *A. sublepidotus* which I have not seen doubtless belongs to the genus.

§ *Coriaceae*. This section of *Anerincleistus* is very distinct looking in its compact shrubby habit, stiff leaves and few large flowers in a head of peduncled cymes. The capsule is large obconic usually angled and the valves are large and thick.

The species are as at present known confined to the hills of the Malay Peninsula at 4000 feet altitude.

A. grandiflora, n. sp.

A shrub or small tree with opposite ovate or elliptic acuminate leaves hardly narrowed at the base, quite glabrous coriaceous 6 to 7 inches long 3 inches wide, nerves conspicuous sunk on the upper surface prominent below, petiole 1 to 3 inches long. Inflorescence terminal stout 4 to 5 inches long, the peduncle 2 to 3 inches in length bearing 3 or four branches with one or more cymes of 3 flowers. Bracts small acuminate. Calyx tube 4-angled narrowed to the base, top broad ¼ inch long and as wide above glabrous, lobes short subovate. Petals broadly oblong ovate mucronulate ⅕ inch long. Stamens 8, filaments long filiform ¼ inch long. Anthers as long acuminate upwards all similar, base shortly prolonged, no appendage. Style long filiform. Capsule ¾ inch long with four thick broad valves protruding above the calyx.

Selangor, Semangkok Pass (Curtis 3753); (Burn-Murdoch, Ridley); Gunong Mengkuang Lebar (F. Dennys).

A. Robinsonii, n. sp.

A branched shrub. Leaves coriaceous lanceolate acuminate, usually red-scurfy on the nerves beneath, otherwise glabrous, base slightly narrowed, nerves slightly prominent above, more so beneath 4 inches long by one inch wide, petiole half to one inch long. Inflorescence solitary terminal peduncle 4 inches long. Cymes 3, or more in an umbel. Flowers half an inch long white and pink. Calyx tube obconic obscurely ribbed red scurfy, lobes short ovate blunt. Petals ovate oblong truncate shortly mucronulate short. Stamens 8 filaments linear minutely glandular. Anther elongate acuminate yellow basal lobe short, no appendage. Style rather stout and short. Capsule half an inch long with long projecting thick valves.

Pahang, Gunong Tahan 5,500 feet (Robinson).

This plant seems to have been mixed with and distributed under No. 5509, *Oritrephes pulchra*, Ridl. It resembles *A. grandiflora* but the flowers and fruit are smaller stamens shorter and leaves different.

A. Barnesii, n. sp.

A shrub with opposite somewhat unequal leaves, coriaceous, lanceolate gradually acuminate narrowed to the base, glabrous six inches long two inches wide, nerves 2 pairs, from the base, and numerous nervules petiole 1¼ inch long. Inflorescence terminal, one to three peduncled cymes; peduncle 1½ inch long stout angled. Calyx tube ¼ inch long scurfy base narrowed delated upwards, lobes ovate subacute not very distinct. Petals ovate with rounded apex. Stamens 8, anthers curved acuminate, base rounded, no appendage, filaments shorter than the sepals. Capsule ⅜ inch long valves erect projecting well above the sepals.

Pahang, Kluang Terbang (W. D. Barnes), No. 10,875 of my distribution.

Distinct in its narrower exactly lanceolate leaves, and smaller flowers.

A. fruticosus, Ridl. Pahang, Tahan mountain, collected by Robinson, also belongs to the group.

§ MOLLIFOLIAE.

A. collinus, n. sp.

Bushy shrub about 5 feet tall. Leaves obovate to lanceolate apex acuminate with rather a long point, base cuneate blunt, in equal opposite pairs five-nerved, the nerves pubescent rising from the base, transverse nerves conspicuous, above scabrid, pale or pink beneath 4-6 inches long 1½-3 inches wide, petiole ½ to 1 inch shortly scabrid hairy as are the young parts of the stem. Inflorescence 2 inches long pubescent terminal with 3-5 flowers in one or two whorls. Calyx lobes forming a ring with 5 very short obscure lobes, pubescent. Petals lanceolate ⅛ inch long bright pink. Stamens 8 yellow all similar, longer than the petals, filaments short linear, anthers curved elongate acuminate nearly ¼ inch long, a short process at the base on the back. Style filiform

$\frac{3}{8}$ inch long. Ovary $\frac{1}{8}$ inch long obconic covered with short white appressed hairs. Capsule short cupshaped hairy $\frac{3}{16}$ inch long, dehiscing at the top, not ribbed. Seeds fawn color, conic angled apex broad truncate with a short lateral point minutely pustular.

Hill woods at Temengoh.

The seeds are narrowed at one end, they dilate upwards to a flat top from one angle of which projects a short process, the sides are angled and squared. There is a very slight difference in size in the stamens making this approach *Oxyspora*. It is allied to *A. albiflora*, of Gunong Berembun, and both differ from typical *Anerincleistus* by the valves of the capsule.

Blastus Cogniauxii, Stapf. Temengoh.

Sonerila flaccida, Stapf. Two varieties were met with, one with plain green leaves the other white spotted. It occurs also on Gunong Pulai in Johor and G. Inas, north Perak.

S. caesia, Stapf. Temengoh woods.

Phyllagathis hispida, King. Banks, Ulu Temengoh. Out of flower.

Ph. rotundifolia, Bl. Woods, Temengoh.

Dissochaeta gracilis, Bl. Temengoh by the river.

D. annulata, Hook. fil. Temengoh woods.

Medinilla Hasseltii, Bl. Temengoh.

Pachycentria tuberculata, Korth. On trees, Temengoh.

Memecylon dichotomum, Clarke. Common in the forests Temengoh, flowers white.

Memecylon eugeniflora, n. sp.

A small tree with slender grey branches. Leaves opposite very shortly petioled lanceolate base broad rounded, apex acuminate obtuse glabrous paler on the back, 2½-3 inches long, ¾ inch wide nerves invisible, petiole $\frac{1}{10}$ inch long or less. Flowers 4 or 5 together in little axillary fascicles, very shortly peduncled with very small ovate cuspidate bracts. All rose pink. Sepals 4 short ovate obtuse. Petals calyptriform short ovate. Stamens 8. Anthers large reniform flattened laterally, dorsifixed bases prolonged, filaments very short. Style fairly stout cylindric.

Temengoh woods.

A small tree with the habit of *M. dichotomum*, Clarke, but with more lanceolate leaves, and bright pink flowers. Calyx tube pyriform not turbinate as in *M. dichotomum*, Clarke.

PASSIFLOREAE.

Passiflora Horsfieldli, Bl. Temengoh, in fruit.

Adenia acuminata, King. Common, Grit, road to Temengoh and Ulu Temengoh.

BEGONIACEAE.

Begonia clivalis, Ridl. Sandy banks at Ulu Temengoh. Occurs on sandy banks at Klang Gates, Selangor.

B. isoptera, Dry. Very common all through the woods in damp spots.

B. leucantha, n. sp.

Rhizome very short and weak under an inch long. Stem short 4 inches long weak, hairy with 3 or 4 remote green leaves on long petioles. Leaf blade ovate cordate unequally lobed entire subacute succulent, 6 inches long, 4 inches wide, the upper ones smaller, above glabrous or with a few scattered hairs, beneath hairy especially on the nerves and edge, petiole 1 to 3 inches long hairy. Flowers terminal on one or two branches on a peduncle $1\frac{1}{2}$ inch long, branches half an inch glabrous. Bracts at base of peduncle broad oblong, truncate with an acuminate point hairy, a quarter of an inch long bracteoles lanceolate acuminate hairy. Flowers male, above tne female, 2 or 3 on a plant white $\frac{3}{4}$ inch across. Sepals oblong obtuse $\frac{1}{4}$ inch long $\frac{3}{8}$ inch wide. Petals much narrower linear oblong half as long. Stamens in a round capitulum pyriform oblong truncate above narrowed to the short filament. Female flower (nearly over). Petals and sepals shorter oblong truncate subequal. Ovary with narrow triangular wings, 2 celled.

Banks between Kuala and Ulu Temengoh.

B. variabilis, n. sp.

Erect caulescent, whole plant a foot tall, stem glabrous. Stipules lanceolate acuminate. Leaves remote long petioled lanceolate acuminate very oblique, apex acute, lower lobe large rounded 4 inches from base of upper lobe to apex, lower lobe 2 inches long, breadth of leaf 3 inches. Upper leaves smaller, and narrower quite glabrous of ten purple, or green spotted with white or plain, petiole $1\frac{1}{2}$ to 3 inches long slender. Cymes terminal, peduncle slender 2 inches long. Bracts at base of peduncle several, papery lanceolate acuminate ribbed $\frac{1}{2}$ an inch long. Male flowers in the terminal cymes female on one from a lower axil. Male flowers $\frac{1}{4}$ inch across. Sepals orbicular ovate obtuse. Petals as long but narrower oblanceolate obtuse. Stamens pyriform truncate. Capsule with three nearly equal low wings (not ripe).

Banks on the track from Kuala to Ulu Temengoh not common. The leaves are variable both in shape and coloring but most are lanceolate acuminate with a large rounded lobe below in a straight line with the edge of the very small upper lobe, so that it looks like a lanceolate leaf with a rounded base with the petiole inserted at the side. The veins on the sepals are dark colored in the dry plant giving it a striped appearance.

CUCURBITACEAE.

Momordica Cochinchinensis, Spreng. Banks of the Sungei Kertai.

Gymnopetalum Cochinchinense, Kurz. Kuala Kenering.

Hodgsonia heteroclita, Hook. fil. Common on the river bank, Ulu Temengoh.

Melothria perpusilla, Cogn. Flowers yellow, Ulu Temengoh.

A new record for the peninsula, Native of India, Ceylon and Java.

M. heterophylla, Cogn.

Rocks at Kuala Temengoh. Not previously recorded from the peninsula but obtained in Malacca by Hervey many years ago.

FICOIDEAE.

Mollugo pentaphylla, L. Common on sand banks in the river at Temengoh, Grit, etc., Lenggong.

UMBELLIFERAE.

Hydrocotyle javanica, L. Paths through the wood, Ulu Temengoh.

H. asiatica, L. About the village and open ground, Ulu Temengoh.

Oenanthe laciniata, Miq. In swampy ground by an old abandoned Sakai clearing. I have met with this too in the Dindings and it is cultivated by the Javanese as a potherb in Singapore. It is probably an introduced plant from Java in the peninsula, but it is curious to find it so far away as Temengoh.

ARALIACEAE.

Trevesia palmata var. *Cheirantha*. Woods, Temengoh.

Heptapleurum heterophyllum, Seem. Near the river bank in woods, Temengoh.

Aralidium pinnatifidum, Ulu Temengoh.

RUBIACEAE.

Nauclea purpurascens, Korth. Banks of the Temengoh in rocky places.

Greenia Jackii, W. and A. Ulu Temengoh in dry hill woods.

Argostemma acuminatum, King. Lenggong.

var. *pubescens*, differing from the typical form in having the midrib of the leaf and the inflorescence covered with pubescence. Temengoh woods.

A. diversifolium, n. sp.

Succulent about 6 inches tall; stem glabrous about 4 inches long. Leaves in a subwhorl from 2 to 5, very unequal in size, succulent, and drying thin, above dark green, beneath pale, glabrous ovate acute, to lanceolate, base rounded or narrowing to the petiole, the largest 5 inches long and 3 inches across, the others smaller; nerves 6 pairs conspicuous, underside of the leaf thickly sprinkled with bundles of raphides. Stipules lanceolate acuminate. Cymes terminal 3 inches or less long many flowered lax; pedicles half an inch long pubescent. Bracts green $\frac{1}{4}$ inch long lanceolate to ovate oblong obtuse. Sepals lanceolate acute glabrous with numerous raphides bundles, less than half as long as the petals. Corolla lobes lanceolate subacute glabrous white. Stamens considerably longer than the petals $\frac{3}{8}$ inch long, filaments $\frac{1}{4}$ of the length of the anther; anther very long curved, base emarginate with rounded lobes, gradually tapering upwards to a point. Style slender filiform with a very small capitate stigma.

Lenggong, (14479).

This is allied to *A. acuminatum*, King, but differs conspicuously in its very much larger flowers, and very long anthers. The leaves are remarkably variable in size and shape, and in number, but when there are but two they are very different in size.

A. pictum, Wall. Banks Temengoh.

A. subcrassum, King. Temengoh.

A. propinquum, n. sp.

Stem about 3 inches tall erect shortly densely hairy. Leaves lanceolate acute, base narrowed finally obtusely unequally bilobed, sub-coriaceous, above glabrous, beneath especially on the nerves hairy, nerves 10-11 pairs, midrib stout densely hairy 4 to 6 inches long 2½ inches wide, petiole ½ to ¾ inch long woolly hairy; opposite (lesser) leaf ¼ inch long sessible lanceolate acuminate. Stipules lanceolate acute resembling the smaller leaf. Inflorescence terminal on a peduncle 4 inches tall or less, pubescent cymose. Cymes, 1 or 2, 2 inches long, pubescent of cymules of three flowers each. Bracts linear pubescent. Corolla and stamens not seen. Ovary urn-shaped with short triangular lanceolate sepals.

Temengoh woods, out of flower. I have the same plant from Bundi in Tringganu where it was collected by Mr. Rostado.

The leaves of the Tringganu plant are rather narrower than those of the Perak one only an inch across and more acuminate upwards. The plant is allied to *A. spinulosum*, Clarke, differing in its petiolate leaves and pubescence.

Hedyotis vestita, R. Br. Paths by the river, Temengoh. Flowers light violet.

H. stipulata, R. Br. Rocks in the river Sungei Kertai. Flowers white.

H. capitelata, Upper Camp, Ulu Temengoh.

H. connata, Wall. Temengoh woods and banks along the road between Grit and Lenggong. This plant which I identify from description has been very incompletely described, the flowers not having been described at all. It is a very pretty little plant, and extremely different from any other *Hedyotis* here in its comparatively large rosy flowers. In neither the Flora of British India nor in the Materials is the corolla described at all. A complete description therefore may perhaps be advisable. I met with two forms. That at Temengoh was much longer and with more distant nodes and more lanceolate leaves; the one on the track near Grit more dwarfed and compact with oblong or oblong lanceolate leaves. Stems prostrate a foot or more long or much shorter, rooting at the nodes, the tip ascending often branched. Leaves in pairs, except at the top where they form a whorl of 4 or 5, sessile or very shortly petioled, acute slightly narrowed at the base, 1-2 inches long ½ inch wide thinly coriaceous and stiff, nerves very inconspicuous, pubescent beneath otherwise glabrous. Stipules cup-shaped with several 12 or more bristly setae. Flowers in a dense head surrounded by the whorl of leaves, and mixed with long slender scabrid bristles. Calyx lobes lanceolate acuminate broad 4 margins scabrid. Corolla ¼ inch long rose pink, tube cylindric lobes 4 or 5 oblong obtuse, mouth and base of lobes densely covered with white woolly hairs. Stamens 5 adnate to tube with short filaments includeds anthers linear oblong. Style filiform with 2 short arms papillose inside. Capsule ellipsoid, 2 celled. Seeds very numerous black irregularly angled punctate.

King calls the leaves membranous, Hooker coriaceous. They are stiff and hard when dry, much like those of *Spermacoce hispida*. The flowers are dimorphic. The stamens being often at the base of the tube instead of near the mouth.

It is met with in Burmah, Mergui, and the Lankawi islands as well as Perak.

Ophiorrhiza rosea, n. sp.

Whole plant about a foot tall, often much branched, stem woody at base, above pubescent with short incurved hairs. Leaves lanceolate acuminate at both ends, lower ones often unequal, upper ones equal, 3-4 inches long 1 inch wide, above quite glabrous, dark green, beneath usually red, (occasionally pale whitish) midribs and nerves scurfy, petiole $\frac{1}{4}$-$\frac{1}{2}$ inch long. Stipules setaceous pubescent. Cymes solitary terminal or axillary also pubescent, shortly peduncled $\frac{1}{2}$-1 inch long, branches divaricate short, lengthening in fruit to 1 inch long. Calyx urceolate with very short lanceolate teeth, pubescent. Bud narrow cylindric. Corolla $\frac{1}{4}$ inch long red, cylindric slightly dilated upwards minutely pubescent, lobes short oblong rounded 5. Anthers linear base cordate nearly as long as the filament. Capsule $\frac{1}{8}$ inch across linear oblong, sinus obsolete or very nearly so glabrous not margined.

Abundant in the Temengoh woods. A form in the Kuala Temengoh woods had longer narrower leaves covered with very short hairs with broad bases.

This species is nearest to *O. argentea*, Wall. *O. Harrisiania* var *argentea*, differing in its pubescent stem, and scabrid mibrib, pink leaves and red flowers, setaceous stipules. I do not see how the *O. argentea*, Wall, as represented in the peninsula by the specimens quoted by King can be *O. Harrisiana* if the figure Wight's Icones No. 1162 represents the latter plant. Wight's figure shews a creeping plant not a small bush as *argentea* is. The whole genus is a very difficult one, the species seeming to run into each other with no very clear distinctive characters, and wants very careful critical study.

Ophiorrhiza Mungos, L. said by King to be found in all the provinces, was based on a tall Ceylon plant, which does not closely resemble anything I have seen in the peninsula, and not at all the plant sent out by King as *O. Mungos.*

I have a large series of the Malay peninsula species in the Singapore Garden Herbarium and find they sort out to a large extent according to districts in which they occur, and thus are probably specifically distinct.

O. erubescens, Wall. Temengoh Woods.

Mussaenda oblonga, King. An erect bush in forest by the river, Ulu Temengoh.

M. glabra, Vahl. Apparently quite absent at Ulu Temengoh, seen only further down the river near Kuala Temengoh in old village sites.

Urophyllum macrophyllum, Korth. Temengoh woods.

U. corymbosum, Korth. Ulu Temengoh woods. I certaintly think this should be kept as a distinct species from *U. macrophyllum* of which King and Gamble make it a variety.

U. glabrum, Wall. Temengoh.

U. streptopodium, Wall. var *glabrum*, Temengoh woods. This form resembles typical *U. streptopodium* but is quite glabrous.

Adenosacme longifolia, Wall. *A malayana*, Wall. Temengoh woods.

There are two forms of this plant readily distinguishable in life but difficult to separate from herbarium specimens. One is the white flowered form of the plains and of the south of the peninsula, occurring in Singapore and Johor. The other is more of a mountain plant with conspicuously yellow flowers. This is the Temengoh plant, which is also a rather exceptionally hairy one. Wallich's *A. malayana* was based on a Penang plant, and the plants from Penang belong to the yellow flowered form.

Gardenia tentaculata, Hook. fil. River bank Kuala Kenering. Common on muddy river banks all over the peninsula.

Gardeniopsis longifolia, Miq. Temengoh woods, and Lenggong.

Petunga longifolia, De C. Ulu Temengoh.

Webera grandifolia, Hook. fil. Ulu Temengoh.

Canthium aciculatum, n. sp.

A shrub with slender branches covered with fine appressed hairs, spines straight needle like brown with paler tips half an inch long. Leaves ovate to lanceolate acuminate with a long point, base rounded 2 inches long by one inch wide, nerves 6 pairs glabrous, petiole $\frac{1}{8}$ inch long, stipules lanceolate with a long subulate point. Flowers small in axillary cymes of 2 or 3 flowers, $\frac{1}{2}$ inch long, pedicels half as long pubescent. Calyx cupular hardly lobed, half as long as the corolla tube. Corolla tube thick and short, broad lobes 5 nearly as long, lanceolate triangular subacute fleshy. Stamens 5 nearly sessile, filaments very short in the mouth of the tube, anthers large oblong with a short point glabrous. Pistil; ovary cylindric pubescent, style stout, stigma capitate grooved. Disc annular. Corolla tube silky hairy within. Berry usually 2 seeded $\frac{1}{4}$ inch long.

Lenggong.

A weak slender branched plant with small inconspicuous flowers.

Ixora opaca, Br. Lenggong.

I. stricta, var. Banks of the Temengoh river. Flowers light orange.

The plant which I take to be the true *Ixora stricta*, Roxb. grows in forests here and there over the peninsula. I have it from Singapore; Seremban (No. 5004);

Johor, Tana Runto; Malacca at Batang Malacca (Derry 257), Ayer Panas (Derry 84); Pahang, Tahan river (2227) and Penang Hill 7092 of my collections.

This plant has comparatively small flowers, the tube slender, the lobes short, often subacute, the leaves broad, but as we go up the rocky streams of the higher lands we find a plant which differs in its habit, size of flowers, and the form of its leaves which may be called var *montana*.

This is a straggling shrub with narrow lanceolate leaves gradually acuminate for a long way, 6 inches long and one inch wide, the corolla tube is 2 inches long, the limb $\frac{7}{10}$ inch across. The typical low-country form has elliptic acuminate to lanceolate leaves and a corolla tube only an inch long and the limb $\frac{1}{4}$ inch across. The difference is so great that at first sight one would hardly identify them as the same species, but there are certainly intermediate stages and I cannot separate them definitely.

Pavetta indica, var *polyantha*. Temengoh and the road to Grit from Lenggong.

Morinda tinctoria, L. Common in the Village, Temengoh.

Spermacoce scaberrima, Bl. Ulu Temengoh.

S. ocymoides, Burm. Temengoh.

Geophila reniformis, Don. Woods Temengoh.

Lasianthus stipularis, Bl. Temengoh woods. A form with almost obovate leaves.

L. inaequalis, Bl. Temengoh and Lenggong forests.

L. flavicans, King and Gamble, Temengoh.

The form here has much narrower and longer leaves than in the Singapore form. The leaves are 9 inches long by $2\frac{1}{2}$ inches wide. The same form was also collected at Taiping.

L. constrictus, Wight. At Ulu Temengoh.

King describes this as having subcylindric pyrenes but the plants sent out by him and quoted by number, have pyrenes angled as usual in the genus, and remarkably verrucose.

L. appressus, Hook. fil. Ulu Temengoh.

L. crassinervi, n. sp.

Stems ⅕ inch through densely woolly hairy. Leaves coriaceous oblong lanceolate acuminate, base rounded above glabrous, shining when dry, nerves impressed; beneath shortly hairy, nerves elevated conspicuously as are the transverse nervules, all covered with long hairs pale, nerves 13 pairs, leaf 6 inches long 1½-1¾ inch wide, petiole woolly thick ⅛ inch long. Stipules lanceolate densely hairy narrow not persistent. Cymes longer than the petiole compact sessile. Bracts persistent narrowly lanceolate hairy ¼ inch long. Calyx hairy. Corolla not seen. Fruit globular not narrowed at either end glabrous ⅛ inch through. Pyrenes 4, warty rugose.

Ulu Temengoh forests, (14487).

This species allied to *L. appressus*, Hook. fil. differs in the size of the leaves and in the form of the pyrenes.

L. glaber, n. sp.

A shrub, stem terete glabrous. Leaves thinly coriaceous eliptic or lanceolate acuminate acute base cuneate glabrous, nerves conspicuously elevated beneath, 6 inches long, 2 inches wide glabrous or with minute appressed hairs, petiole ½ inch long on the lower leaves and shorter above. Stipules lanceolate acuminate margined with long yellow hairs ⅜ inch long. Bracts nearly as long lanceolate linear hairy. Flowers several together very shortly pedicelled. Calyx ampliate urceolate with 5 long acuminate points as long as the tube hairy. Corolla tube twice as long as the calyx with the lobes ¼ inch long white glabrous, lobes 5 oblong acute densely white hairy within. Stamens five exsert, anthers oblong, pollen apparently white.

Fruit 3/10 inch long obovoid narrowed at the base glabrous, apex very shortly beaked by the remains of the calyx, pyrenes 4 rough.

Temengoh woods (14490).

Near *L. flavicans*, King, but nearly perfectly glabrous and corolla lobes, and stamens 5.

L. sordidus, n. sp.

Shrub with stems densely appressed hairy, hairs yellowish. Leaves lanceolate acuminate base cuneate above glabrous beneath with the nerves appressed hairy 4-5 × 1½ inches, nerves 6 pairs elevate beneath transverse nerves conspicuous. Petiole ⅛ inch hairy. Stipules lanceolate acuminate hairy. Cymes short. Bracts lanceolate hairy. Calyx lobes lanceolate hairy, ½ as long as corolla tube. Corolla ¼ inch long tube minutely pubescent lobes oblong densely woolly 5.

Fruit subglobose equally pointed at each end ⅛ inch long when dry, hairy, pyrenes 4 angled on inner face slightly roughened.

Ulu Temengoh (14488).

Like the last but much more hairy, stipules and bracts smaller more hairy. Corolla lobes 5.

Psychotria sarmentosa, var. Lenggong.

This plant differs from the common Southern Peninsula form in its narrower, thinner leaves with fewer nerves and quite glabrous inflorescence.

I have it from Penang, Kamposa in Kelantan, Kedah, Perak and Bangtaphan in Siam (collected by Dr. Keith).

Ps. ascendens, n. sp.

Stems slender climbing and rooting on tree trunks, above pubescent. Leaves ovate subacute base rounded 1-1½ inch long ½-1 inch wide, above glabrous, nerves depressed, beneath pubescent especially on the nerves, nerves slender 7 pairs meeting within the margin in loops, petiole very short ⅛ inch or less long pubescent. Stipules very small pubescent caducous. Cymes lax on slender peduncles pubescent, peduncles 1 inch or less. Whole cyme about 1½ to 2 inches long, branches spreading. Bracts lanceolate pubescent, ⅛ inch long. Bracteoles linear smaller. Pedicels pubescent ⅛ inch long. Calyx tube short campanulate, 5 lobed lobes acute. Corolla ⅛ inch long, lobes 5 oblong obtuse pubescent outside, as long as the tube inside the tube, mouth woolly. Anthers 5 subsessile. Fruit ¼ inch long elliptic narrowed at the base and slightly often towards the tip with 8 grooves.

Temengoh, creeping on tree trunks low down.

This plant resembles closely one distributed from the Buitenzorg gardens by Koorders under the number 29375b and the name *Psychotria ? laxiflora*, Bl., but this plant is quite glabrous. Now *Ps. laxiflora* is described by Blume as having the leaves glabrous and narrowed at the base which neither the Temengoh, nor Koorders' plant has. In the Materials, King and Gamble describe *P. laxiflora*, Bl., as having 4 sepals, corolla lobes and stamens. The number of parts is not mentioned in Blume or Miquel's description, and Koorders' plant has 5 calyx lobes on the fruit. I have seen no plant corresponding to Blume's and Miquel's descriptions in the Malay peninsula and the specimens Singapore (Ridley 13 and 4828), given in the Materials as *Ps. laxiflora*, Bl., are both *Gaertnera viminea* and part of the description of the *Psychotria* at least seems to apply to the *Gaertnera*. I have not seen the Perak plants quoted in the Materials.

P. montana, Bl. In fruit, Temengoh.

P. stipulacea, Wall. Woods, Kertai river and Temengoh.

STREBLOSA, Korth.

The genus *Streblosa* was founded by Korthals for three or four plants allied to the genus *Psychotria* but differing notably in the axillary inflorescence. Blume referred *S. tortilis*, Korthals to the genus *Psychotria* and King and Gamble as well as others followed this. Dr. Stapf however in the Flora of Kinabalu, Trans. Linn. Soc. IV. 182. Pl. XIII. A, in making the new species, *S. urticina*, urges that the old genus should be restored. This I think is advisable and the genus would then comprise the following species.

1. *S. tortilis*, Korth. Kruidk. Arch. II. 246 from Penang, Perak and Sumatra.

(The Singapore, Lobb. locality is doubtless wrong. Lobb. collected in Penang and doubtless got the plant there. It does not appear to occur in Singapore).

2. *S. hirta*, n. sp. Penang, Perak.
3. *S. pubescens*, n. sp. Malay Peninsula.
4. *S. urticina*, Stapf. Kinabalu.
5. *S. bracteata*, n. sp. Borneo.
6. *S. undulata*, Korth. Borneo.
7. *S. polyantha*, Korth. Sumatra.

1. *S. tortilis*, Korth. is fully described in the Materials for a Flora of the Malay Peninsula under the name *Psychotria tortilis* Bl. It occurs in Penang and Perak, a closely allied plant I met with in the Tahan Valley and along the Perak river at Pulau Tawar, seems to me to be specifically distinct, I describe it under the name of

2. *St. hirta*, n. sp.

Stem unbranched about a foot tall, woody below, and glabrescent hairy above $\frac{1}{8}$ inch through at the base. Leaves lanceolate acuminate, narrowed at the base, 4-6 inches long $1\frac{1}{2}$-2 inches wide, nerves 8-9 pairs, above minutely punctate, and sprinkled thickly over with long pale hairs, beneath similar but the nerves very densely hairy, petiole $\frac{1}{2}$ an inch long, hairy. Stipules forming a broad cup bifid on both sides, about a third of their length, tips cuspidate glabrous. Panicle short dense hairy $\frac{1}{2}$ inch through. Bracts lanceolate hairy narrow. Pedicels hairy much longer than the calyx. Calyx campanulate very small with 5 ovate lobes as long as the tube, hairy. Fruit hairy subglobose flattened at the top, grooved between the 2 cocci.

From *S. tortilis*. Korth. this differs in its hairy narrower leaves and hairy fruit, not brown streaked and very much broader stipules forming a cup.

3. *S. pubescens*, n. sp.

Stem about a foot tall, woody, often taller, young parts red hairy, old portions glabrous swollen at the nodes, $\frac{1}{4}$ inch through. Leaves ovate acute base cuneate 6 inches long, 3 inches across, herbaceous above glabrous, minutely pustulate beneath shortly scurfily red pubescent on the nerves ; nerves about 12 pairs slender subhorizontal ; petiole 1 inch long pubescent. Stipules papery lanceolate acuminate, $\frac{1}{4}$ inch long glabrous except for a pubescent keel. Flowers in dense axillary panicles from the axils of fallen leaves, 1 to 2 inches long, the branches growing as the fruit develops, all covered with red pubescence. Rachis flexuous with flowers nearly sessile in pairs. Bracts lanceolate acuminate with glandular hairs on the edges, keel, and back. Flowers very small $\frac{1}{10}$ inch long, pedicels very short and thick. Calyx very short campanulate with 5 short acute lobes tufted with hair. Corolla very short tube cylindric, lobes 5 oblong rounded at the tip pubescent outside white. Stamens shorter than the corolla, filaments slender rising from near the base of the tube. Anthers as long as the filaments. Style shorter stout thick with 2 oblong rounded flat white stigmatic arms. A disc of 5 pinkish reniform glandular bodies surrounding the style base, becoming a circle in the fruit. Fruit hairy, ovoid. Seeds 2 elliptic ovoid dark brown minutely punctate.

Streblosa.

Johor, Gunong Panti; Perak, Temengoh Woods; Penang, Balik Pulau (Ridley 9425); Dindings at Telok Serah.

Very distinct from *S. tortilis*, Korth. in its being woody, and the Dindings form has narrower more lanceolate leaves, long acuminate at the base.

S. urticina, Stapf. This is given in the original description as herbaceous and scandent. The specimen from Kinabalu of Haviland's collection in the Herbarium of the Botanic Gardens, Singapore, is decidedly woody. I obtained plants at Puak in Borneo (12430 of my collection) and at Lundu (12432) which I am unable to separate from *S. urticina*. They are more robust with larger leaves, the stem quite woody and erect.

I have another species from Sarawak which I will describe here.

S. bracteata n. sp.

Stem tall over 18 inches long woody glabrous, nearly ¼ inch through. Leaves ovate lanceolate, subacute narrowed to the base, 6-7 inches long 4 inches wide glabrous except for a little scurfy pubescence on the midrib, nerves slender 20 pairs, petiole 1-1½ inch long. Stipules broad glabrous, oblong deeply bifid with the lanceolate points ending in subulate cusps, $\frac{1}{2}$ inch long. Panicles dense an inch long, few branched on slender scurfy peduncles half an inch long. Bracts oblong obtuse glabrous longer than the flowers. Pedicels longer than the flower pubescent. Calyx urn-shaped pubescent, with 5 short ovate lobes much shorter than the tube. Corolla and stamens not seen. Fruit $\frac{1}{10}$ inch long elliptic narrowed to the tip glabrous, with 8 ribs longer than broad.

Borneo, Sarawak, Jambusan (12437) and Bau (11741) of my collections.

This is a very distinct plant in its almost entirely glabrousness, and its large oblong bracts. It appears to be most closely allied to Korthals' *S. undulata* described in the above quoted paper. I have seen no specimen of his, nor the original paper in which it was described but the description is given in Miquel's Flor. Ind. Bat. Vol. II p. 294 under Psychotria as follows.

S. undulata, Korth. "Folia elliptica undulata subtus in nervis hirsuta, stipulae ovatae acuminatae ciliatae, flores in axillis densi conferti, bracteis oblongis sustenti."

Borneo ad Sakoembang.

Now this though resembling *S. bracteata* in its peculiar bracts, differs in the nerves beneath not being hairy, and the form of the stipules so I conclude Korthals did not intend *S. bracteata* by his description of *S. undulata*.

The description of his *S. polyantha* in the same publication is as follows. "Caulis nodosus hirsutus, folia ovata utrinque acuta, supra sparse subtus in nervis dense hirsuta, stipulae rotundatae undulatae, flori in racemis abbreviatis conferti." Sumatra'ad Singalang. This most resembles *S. pubescens* but that has glabrous upper sides to the leaves and lanceolate acuminate stipules.

COMPOSITAE.

Vernonia cinerea, Less. Temengoh.

Elephantopus scaber, L. Kampong, Temengoh.

Ageratum conyzoides, L. Common.

Blumea balsamifera, De C. Abundant in the village, Ulu Temengoh.

Bl. lacera, De C. Village, Temengoh.

Bl. membranacea, De C. Not common, a few plants on the track by the Temengoh river, above the village. Flowers bright yellow.

Emilia sonchifolia, De C. Temengoh.

Gynura bicolor, De C. Village, Temengoh.

Spilanthes acmella, L. Track through the woods, Temengoh.

Bidens pilosa, L. Sakai clearings, Temengoh river.

CAMPANULACEAE.

Lobelia affinis, Wall. Common in damp spots. Near the Temengoh river and Sungei Kertai.

Pentaphragma Scortechinii, King and Gamble, Banks at Ulu Temengoh.

MYRSINEAE.

Maesa ramentacea, Wall. A variety with larger leaves than usual. Sungei Kertai.

M. striata, Mez. At Lenggong. This is recorded from Penang, and Perak, and also from Sumatra. It is by no means common.

Labisia pumila, Benth. Temengoh woods.

Ardisia longepedunculata, King. At Temengoh, only once before collected.

A. villosa, Roxb. Temengoh woods.

A. suffruticosa, Ridl. Growing in masses on banks by the Temengoh track between Kuala and Ulu Temengoh. Also occurs in South Johore.

EBENACEAE.

Diospyros trunciflora, n. sp.

A small tree. Leaves elliptic lanceolate acuminate base slightly narrowed thinly coriaceous 9 inches long 3 inches wide quite glabrous drying grey and shining, nerves about eleven pairs, joining at the apex in intramarginal loops, reticulations distinct, petiole $\frac{1}{8}$ to $\frac{1}{4}$ inch. Inflorescence in very short cymes in large tufts on the old wood of the trunk. Peduncles $\frac{1}{8}$ inch long or less covered with red hair. Bracts minute thick ovate. Male flowers not seen. Female flowers. Calyx lobes 4 ovate subacute nearly $\frac{1}{8}$ inch long hairy. Corolla very small hairy, ovary conical densely hairy. Fruit ovoid glabrous black when dry an inch through, the apex alone retaining its hairs. Calyx lobes $\frac{1}{4}$ inch long triangular reflexed densely covered with yellow hairs.

Lenggong. I have met with it also in Pahang on the Tahan river. In the Dindings on Gunong Tungal, (no 9447 of my collection), in Perak at Kuala Dipang (9716) and from Tampin hill collected by Goodenough (No. 1858).

I have not been fortunate enough to get male flowers, so the description is incomplete, but it is nearest I think to *D. caliginosa*, Ridl.

OLEACEAE.

Jasminum bifarium, Wall. River banks, Ulu Temengoh.

Linyoiera pauciflora, Clarke. Woods, Ulu Temengoh.

APOCYNACEAE.

Rauwolfia perakensis, King and Gamble. Limestone rocks, Lenggong. Flowers pinkish.

Dyera costulata, Hook. fil. A few small trees about Ulu Temengoh.

Ervatamia peduncularis, King. Woods by the Temengoh and Kertai rivers.

E. cylindrocarpa, King and Gamble. Woods, Temengoh.

Chonemorpha macrophylla, Don. Temengoh.

Wrightia laevis, Hook. fil. Ulu Temengoh, Flowers white.

Ichnocarpus ovatifolius, A. D. C. Scrambling over trees by the Temengoh river.

ASCLEPIADEAE.

Marsdenia tinctoria, Br. Temengoh.

Pentasacme caudatum, Wall. On rocks in the rivers, Temengoh and Kertai.

Gymnemaflava, n. sp.

Stem slender climbing long covered with short hairs. Leaves ovate acuminate base rounded herbaceous glabrous 1-2½ inches long by 1 inch wide, nerves 3 pairs, apices inarching some way from the margin, petiole half an inch long. Peduncles axillary slender 1 inch long pubescent with one or two pedunculated cymes, peduncles ½ inch long. Flowers small yellow pedicels ⅛ inch long pubescent. Sepals free to the base ovate pubescent, as long as the corolla tube. Corolla campanulate with narrow linear twisted lobes obtuse rather fleshy pubescent, whole corolla nearly ¼ inch long. Corona of corolla none. Staminal corona cylindric, connectives prolonged oblong rounded at the tip, longer than the low style apex. Pollinia in pairs, pyriform waxy pendulous, pollen carriers small horny, dark colored.

Temengoh on the river bank climbing over trees.

Stephanotis parviflora, n. sp.

Stems creeping and rooting at the nodes with fine roots, bark when dry corky rugose fawn colored with lines of transverse raised dots, pubescent hairy. Leaves in distant pairs 3 to 4 inches apart, coriaceous ovate acute base rounded, above glabrous or when young sprinkled with long hairs, beneath hairy especially on the midrib and nerves, nerves invisible above, beneath one pair ascending from the base, and two pairs above more widely spreading, 2 to 3 inches long $1\frac{1}{4}$ to 1 inch wide; petiole thick hairy half an inch long. Inflorescence on a stout peduncle hairy and 1-3 inches long, raceme up to half an inch long glabrous. Bracts small ovate. Flower waxy white on a short stout pubescent pedicel. Calyx lobes pale, glabrous lanceolate shorter than the corolla tube. Corolla $\frac{3}{4}$ inch across, tube $\frac{3}{10}$ inch long dilate urceolate lobes lanceolate acute hairy outside and rather thickly sprinkled with stellate hairs within. Staminal corona from the base of the tube and projecting to the tube mouth. Corona of five processes with a short filament at the base, then oblong thick grooved and winged on the inner face above prolonged into a bifid linear process attached on the inner face to the style apex. Anthers with a thin oval rounded process shorter than the corona process. Pollinia decurved pyriform, in pairs on the dark brown pollin carrier. Style apex short conical shorter than the coronal processes.

Perak. At Temengoh and at Tapah, climbing on trees.

The distribution of the genus *Stephanotis* is a very remarkable one. Two or three species are recorded from Madagascar, two including the present one from the Malay peninsula, one from Borneo and one from Cuba, one from Japan and one from Hongkong.

The other Malay peninsula species is *S. Maingayi*; Hook. fil, a plant which has only twice been met with, once by Maingay in Malacca but exactly where is not recorded and once at Changi in Singapore by Hullett. No one else has apparently ever seen it. Many years ago I visited with Mr. Hullett the spot where he found the jungle trees draped with this beautiful species, but neither then nor later could we find any of it, and since then this spot has been destroyed for some minor cultivation. As the flowers are over two inches across and pale yellow, the plant would be conspicuous enough, and possibly it is a shy flowerer and might be overlooked out of flower.

S. parviflora, I have twice met with at Tapah, it was growing abundantly over a tree by a stream on the roadside but in spite of all searching I could only find one flower and one bud. At Temengoh the plant collector got a single specimen with one flower. It is evidently a shy flowerer. In general appearance both in foliage and flower, it resembled a very small form of *Hoya coronaria*, but examination showed it was no *Hoya* but a true *Stephanotis* very distinct from any other species, in the small size of its flowers, its short corolla tube, the long staminal corona, visible and almost projecting beyond the mouth of the tube. The staminal column is peculiar in having the processes terminating in rather a long oblong bifid limb, much overtopping the style apex.

Hoya perakensis, n. sp.

Stems slender creeping and rooting. Leaves ovate acute coriaceous glabrous base broad truncate rounded 4½ inch long 3 inches wide, nerves from the base 5, with few arched secondary nerves, drying brown with recurved edges, petiole thick ¼ inch long. Raceme thick 2 inches long, of which the peduncle is ¾ inch, all glabrous, umbell 1 inch across many flowered, pedicels slender ½ inch across. Sepals ovate lanceolate obtuse pubescent very short. Corolla $\frac{3}{8}$ inch across lobes triangular acute minutely pubescent outside, glabrous within. Corona of 5 processes inflated adnate at base staminal column, lower lobe fleshy horizontal lanceolate sublobed at base thick elevated in the centre. Upper lobe tooth-like $\frac{1}{3}$ length of the lower lobe, 2 valved below. Staminal column short, anthers incumbent on the style apex. Anther cells divergent appendages linear oblong, tips scarious. Pollen masses narrow oblong linear flat straight attached by very short horn-shaped caudicles to the dark brown elliptic carriers.

Temengoh and Kuala Kenering, allied to *H. Forbesii*, King.

H. revoluta Wt. Kuala Kenering.

Dischidia pubescens, n. sp.

Stem long creeping slender pubescent. Leaves lanceolate thinly coriaceous acute base usually rounded $1\frac{1}{4}$ inch long $\frac{1}{2}$ inch wide glabrous above, hairy beneath at the base and edge with white hairs, or glabrescent nerves invisible above, beneath two ascending from the base and meeting two pairs in reticulation near the margins, petiole $\frac{1}{8}$ inch long. Peduncle $\frac{1}{8}$ inch long stout. Pedicel $\frac{1}{10}$ inch long. Sepals very small ovate lanceolate obtuse hairy. Corolla tube $\frac{1}{8}$ inch long delated at the base narrowed upwards gradually, lobes linear narrow all glabrous, pustular, tube villous within, lobes glabrous. Corolline corona of five thin membranous, processes broad at the top, spathulate with two deflexed arms. Staminal column elongate, anther wings oblong, anther cells. Pollinia falcate pyriform, caudicles narrow carriers large shorter than the pollinia. Style apex conic rather long.

Temengoh woods.

Allied to *D. Scortechinii*, but the corolla is not villous and the leaves are hairy.

BORAGINEAE.

Cordia myxa, L. Banks of the river Temengoh. King and Gamble suggest that this is an introduced plant. It may be so about Singapore and Malacca, but it is very improbable that it has been introduced at Ulu Temengoh.

CONVOLVULACEAE.

Merremia hastata, Hallier. Rocks at Kuala Temengoh.

SOLANACEAE.

Solanum involucratum, Bl.

Cleared ground round villages, Grit and Ulu Temengoh.

I have never before met with this plant in the Peninsula nor is it previously recorded.

S. aculeatissimum, Jacq. Open ground near the Temengoh river.

This is only recorded in the Materials for a flora of the Malay Peninsula from Singapore collected by G. Thompson, and is not represented in the Calcutta herbarium. It is not uncommon on the sea coast of Singapore and has long been in cultivation thence in the Botanic Gardens. It is usually found near or in cultivated ground, but it is not valued by natives and seems I think to be indigenous. Its globular scarlet fruits make it very attractive. The flowers are white.

S. verbascifolium, L. Abundant in the village Temengoh.

SCROPHULARIACEAE.

Adenosma coeruleum, Benth. Woods by the Temengoh river.

Limnophila erecta, Benth. Ricefields, Temengoh.

Torenia mucronulata, Benth. Abundant by the track near Ulu Temengoh.

T. polygonoides, Benth. Abundant along the track to Ulu Temengoh, covering the ground.

Both of these with *Bonnaya reptans* occurred in large patches along the elephant track through the forest and I judge from their appearance have been transported thither by the elephants.

T. peduncularis, Benth. Kuala Temengoh on the borders of the river, and on the rocks in the Perak river below this, a pale washed-out looking flower.

T. atropurpurea, Ridl. Ulu Temengoh, scarce.

Vandellia crustacea, Benth. Common, Ulu Temengoh.

V. hirsuta, Benth. In cultivated sandy spots, Kuala Temengoh.

V. mollis, Benth. Along tracks by the Temengoh river. Apparently rare in the peninsula for it has hitherto only been collected by me at Rawang in Selangor.

V. pedunculata, Benth. In wet spots by the ricefields, Ulu Temengoh.

Artanema angustifolium, Benth.

This pretty plant is common along the river banks at Kuala Kenering and Temengoh.

Curanga amara, Juss. Borders of woods by the track along the Temengoh river, Ulu Temengoh.

Bonnaya brachiata, Link. Sandy paths, Ulu Temengoh.

B. reptans, Spring. Abundant along the elephant track by Ulu Temengoh. King gives "Corolla purple." It is pale azure blue.

Scoparia dulcis, L. Common in the villages and along the river bank, Ulu Temengoh.

Microcarpoea muscosa, Br. Common in ricefields, very small, Ulu Temengoh.

LENTIBULARIACEAE.

Utricularia bifida, L. Rocks by the Perak river below Kuala Temengoh.

GESNERACEAE.

Aeschynanthus marmorata, Moore. On tree at Temengoh.
Ae. radicans, Jack. Hanging from trees over the Kertai and Temengoh rivers.

Didymocarpus ramosa, Ridl. Common on banks at Temengoh. Flowers light yellow.

D. crinita, Jack. A form with silkier leaves than usual. Temengoh.

D. bombycina, Ridl. The commonest species in the district, usually about 6 inches tall. The flowers were pale bluish white, very much resembling those of the common form of *D. crinita*, Jack. A plant with much larger leaves in fruit found in the same district, is I think an unusually large form only.

D. kompsoboea, Clarke. A big stout plant in fruit only, occurred in some of the valleys running through the hill woods at Temengoh. It exactly resembled the Pahang plant.

Chirita caliginosa, Clarke. Limestone rocks at Lenggong.

Stauranthera umbrosa, Clarke. In the Temengoh woods.

Cyrtandromoea acuminata, Benth. Woods at Temengoh. This plant has an odd way of coming up where on open edges of woods, a tree or two has been felled or has fallen.

C. repens, n. sp. Stem slender woody creeping and throwing up branches about 8 inches tall, covered with fine appressed silky hairs, base nude of leaves. Leaves ovate obtuse, rounded or shortly cuneate at the base, margin crenate above dull green sprinkled rather thickly with stellate hairs, nerves indistinct, beneath nerves 5 pairs and reticulations elevated surface grey, densely covered with stellate hairs, 3 to 4 inches long 2 inches wide, petiole 1-2 inches long pubescent with stellate hairs. Inflorescences below the leaves, near the base of the stem, of one or two pairs of capitula on peduncles half an inch long. Bracts lanceolate acuminate, cuspidate $\frac{1}{4}$ inch long. Capitulum about an inch across or less. Calyx red campanulate, with 5 lanceolate cuspidate teeth, sprinkled with stellate hairs, teeth nearly as long as the tube. Corolla white $1\frac{1}{4}$ inch long, tube narrow slender, then suddenly dilating into a campanulate portion of equal length, lobes unequal, lower lip the longest rounded. All pubescent. Stamens 4; unequal pairs, filament linear broad. Anther orbicular, with a thickened round connective, cells large hemispheric, dehiscence linear. Style shorter than stamens with two short subulate arms. Fruit globose black.

Sandy borders of paths abundant and densely covering the ground so that the flowers are quite hidden by the leaves. Temengoh. From Kuala Temengoh to Ulu Temengoh. Quite unlike any other species.

Cyrtandra pilosa, Bl. Along the road from Lenggong to Grit.

C. cupulata, Ridl. Temengoh woods.

This seems to be a very widely distributed plant in the Peninsula.

C. barbata, n. sp.

Stem thickly covered with rather long shining brown hairs. Leaves oblanceolate acuminate, base narrowed to the petiole, margins serrate; 5 inches long, 3 inches wide, above glabrous densely minutely pustular, beneath minutely pustular with hairs rising from the pustules, nerves and midrib densely covered with brown hairs. Flowers 2 or 3 in a cupular bilobed bract, with lanceolate acuminate points, broadly tubular below $\frac{3}{4}$ inch long, densely brown hairy. Calyx as long as the the corolla tube, lobes lanceolate thin with a few long hairs.

Corolla nearly an inch long glabrous white, lower lip oblong in outline, longer than the upper lobes, lobes rounded. Stamens glabrous, anther cells divaricate at base. Style pubescent, stigma large orbicular. Fruit not seen. Only one plant found in flower, in damp woods at Temengoh.

This species resembles in habit *C. pilosa*, Bl. but is remarkable for the abundant and dense red-brown hair on the bracts, calyx and nerves, and the bracts are connate into a cup, as in *C. cupulata*, etc.

C. rotundifolia, n. sp.

Stem about 3 inches tall brown hairy. Leaves broadly ovate rotundate margins serrate coarsely, base cordate sub coriaceous above glabrous, minutely punctate, nerves beneath elevated 5 pairs with prominent transverse secondary nerves. All covered with brown felted hair, as is the midrib, lamina 6 inches long and as wide; petiole 3-6 inches long, covered with brown felted hairs. Capitula deflexed on brown-hairy peduncles 3 inches long. Capitulum over an inch through. Basal bracts much shorter lanceolate cuspidate hairy chiefly on the edges and tip ½ inch long. Calyx ¾ inch long tubular brown hairy, with short linear subulate points. Corolla tube little longer covered with white silky hairs, limb white with brown markings in the mouth, silky hairy outside an inch long. Stamens filaments glabrous slightly flexuous; anthers elliptic with a tuft of hairs at the base. Style rather stout pubescent. Stigma large cup-shaped. Fruit cylindric corky, acuminate at the tip ¾ inch long.

In wet woods at Temengoh, along the source of the stream, Sungei Tampan.

Closely allied to *C. pendula*, Bl. but differing in its rounded leaves and hairiness.

BIGNONIACEAE.

Radermachera amoena, Seem.

Fine trees along the Temengoh and Kertai rivers.

R. glandulosa, Schum. Temengoh.

PEDALINEAE.

Sesamum indicum, L. Common in waste ground at Kuala Temengoh.

ACANTHACEAE.

Thunbergia fragrans, Roxb. var *Javanica*.

Kuala Temengoh, Wray obtained it also at Ulu Kenering in this district.

The wild form here is all var *Javanica*. It is common in Upper Perak, and in Selangor by the Batu Caves. The Pekan plant mentioned under *fragrans* true in the Materials is also the var *Javanica*. The typical form of *fragrans* nearly glabrous and with smaller flowers occurs as an escape in Singapore in hedges round Tanglin, etc. with *T. alata*, Sims. The species does not occur truly wild at all in Singapore and Kunstler's plant quoted in the Materials must have been an escape.

Th. laurifolia, Lindl., Temengoh woods.

This is common over most of the low country woods of the Peninsula.

Th. grandiflora, Roxb. given in theMaterials as from Singapore collected by Schomburgk, was obviously from a garden plant. It is not a native of the Peninsula so far as I have seen and certainly not from Singapore. It remains a considerable time in abandoned gardens, but I do not think ever fruits here. Clarke in the Materials says it runs excessively close to *Th. laurifolia*, and corrects Lindau's remarkable statement that it has solitary axillary flowers. The racemes in fact are conspicuously long. The two species however in life are extremely different in appearance, and cannot be confused. The leaves of *Th. laurifolia* are narrower entire or almost with a small side lobe, and deep green. The racemes are much shorter as are the pedicels. The calyx is narrow and entire; bifid to the base and much broader in *grandiflora*. The corolla in *laurifolia* is much smaller, and the style longer. In the Botanical Magazine *Th. laurifolia* is figured (Pl. 4985) of a pale pink, the description of it however says it is blue. It is figured again as *T. Harrisi*, Hook. (Pl. 4998) of the ordinary colour, but it is often much deeper in tint.

Staurogyne setigera, Kuntze. Common in Temengoh woods.

S. longifolia, Kuntze. Not common, Temengoh.

S. lasiobotrys, Kuntze. Not very common Temengoh.

S. Griffithiana, Kuntze. Common, Ulu Temengoh.

S. arcuata, Clarke. On banks at Ulu Temengoh. The corolla is all dark crimson.

S. merguensis, Kuntze. Ulu Temengoh.

Hygrophila saxatilis, Ridl, Rocks in the Temengoh and Kertai rivers. This grows in cracks in rocks in the streams or along the edges, where it must be often covered with water in the rainy seasons. On the rocks below Kuala Temengoh, in the Perak river it was taller than usual, 12 inches tall. It is usually 3 or 4 inches tall.

Ruellia repens, L. Common at Ulu Temengoh.

Ruellia ringens var *dejecta*, R.

Undoubtedly this species I believe; a straggling form rather taller and more pubescent than usual. Banks of the river Temengoh. A new record for the Peninsula.

Hemigraphis Ridleyi, Clarke.

Flowers pale blue. At Ulu Temengoh, and at Kuala Temengoh on the river banks. Hitherto only known from Pahang.

H. confinis var *minor.*

Grassy spots in the Temengoh village in shade. I could find very little of this plant, which perhaps had mostly perished from the dry season. It is a dwarf plant about 6 inches tall and is the plant mentioned by me as *H. confinis*, Anders. in the account of the East Coast Flora. It may be specifically distinct, as it seems always to be dwarf, with rather narrower leaves, and I have never seen the true *confinis* a much taller plant growing with it. It always occurs in short grass under bushes in old orchards.

Eranthemum porphyranthos, C. B. C. Common in shady open spots at Temengoh and Lenggong. This is very widely spread over the Peninsula. The color of the flower somewhat variously described in the Materials is always a pinkish violet. Clarke's var *evolutior* is hardly worth keeping up. It is simply a stout state of which usually the top has been bitten off by some animal and the plant then branches. It occurs wherever there is any quantity of the ordinary form.

E. Selangorense, C. B. C. Woods at Ulu Temengoh.

E. Teysmanni, Anders., Ulu Temengoh at the Upper Camp. This pure white flowered plant is easily recognized by its climbing habit, scrambling to some height up bushes and often forming a bulky mass.

(*E. acuminatissimum*, Miq. The origin of this plant seems quite obscure. It has never been found wild or as an escape in the Peninsula. It was formerly much cultivated here but seems to have disappeared altogether from cultivation, and may very well be omitted from our flora).

Strobilanhes albo-striata, Ridl. In the Temengoh woods, local.

S. sylvestris, n. sp.

Herb about 2 feet tall, young parts finely pubescent. Leaves in subequal pairs, 2-3 inches apart, lanceolate acuminate at both ends, decurrent on the petiole, glabrous, but densely spotted with bundles of raphides 4 to 6 inches long 2 inches wide, petiole winged to the base, ½-1 inch long. Spikes terminal and axillary pubescent. Bracts opposite lanceolate acuminate ¾ inch long ⅛ inch wide or less, green thickly pubescent, and marked with raphides, green and falling off as each flower opens. Spikes elongating to over 3 inches. Flowers in pairs opposite each other white, nearly sessile on a dilated small pedicel. Calyx of 5 linear lanceolate pubescent lobes ¼ inch long acuminate, connate at base for about ¼ of their length. Corolla hairy pubescent 2 inches long, tube narrow at the base for nearly an inch above funnel-shaped, lobes ¼ inch long rounded tube within covered with white hairs. Fruit not seen.

Temengoh woods. Rare only one flower seen. Allied to *S. collinus*, Nees, but with long lanceolate acute bracts, narrower leaves and much larger flowers.

S. violacea, n. sp.

A spreading herb with flexuous branches, stems glabrous, 2 feet or more long internodes over 2 inches long, with 2 low wings. Leaves alternate herbaceous glabrous with numerous raphides-bundles, lanceolate acuminate at both ends, margins undulate occasionally slightly serrate at the base, nerves inconspicuous 7 pairs, meeting within the margin incurved loops, 4-6 inches long 1½ inch wide. Spikes terminal and axillary, in pairs in the axils 3-4 inches long lax. Bracts lanceolate obtuse pubescent, caducous ¼ inch long. Flowers sessile. Calyx lobes linear obtuse minutely pubescent very narrow ¼ inch long free almost to the base. Corolla 1 inch long violet, tube at base narrow cylindric ¼ inch, then widely campanulate ¾ inch long curved, lobes short rounded, ½ inch across the limb, glabrous. Stamens in 2 pairs, the longer pair twice as long as the shorter. Anthers linear oblong.

Wood along the banks of the Temengoh river near Ulu Temengoh (14524), a pretty plant allied to *S. collinus* Nees. Some of the leaves are much more distinctly serrated than others.

Gymnostachyum decurrens, Stapf. Temengoh woods from Kuala Temengoh to Ulu Temengoh.

The type of this species was obtained in the Tahan woods in Pahang and has never been met with since. Plants brought by me from Pahang have established themselves freely in the Botanic Gardens in shady places. The typical form was found on this occasion in the woods between Kuala Temengoh and Ulu Temengoh, and at the latter place a form or variety was met with which differs in some respects markedly from the typical form and I propose to call it var *pubescens*. Stems long and creeping upwards of a foot long, with erect branches 6 inches or more tall covered with multicellular hairs, leaves ovate 3 inches long apex obtuse base decurrent, above sprinkled with short hairs, beneath covered with similar hairs, midrib and petiole densely covered with multicellular hairs like the stem. Rachis and calyx densely hairy, sepals rather, shorter. Corolla and stamens similar to type. The coloring of the flower was the same as the type flower viz: tube of corolla white, limb tinted and minutely dotted with violet, the lower lip with deep violet lobes, palate white. Stamens black violet with white pollen. I have not seen anywhere else the long creeping rhizome of this variety. The original form from Pahang which is much more compact and hairy keeps true wherever it grows in the gardens.

Justicia laetevirens, n. sp.

Herb about 2 feet tall, stem pubescent. Leaves opposite equal, ovate to ovate lanceolate, acuminate acute base broad, or in lanceolate forms narrowed to the petiole densely velvety hairy on both surfaces expecially beneath, nerves 7-8 pairs ascending to the margin, and forming loops on the margin, 4 to 6 inches long 3-3½ inches wide drying bright yellowish green, petiole an inch long. Spike up to 9 inches long ½-¾ inch across. Bracts ovate acute, bright green hairy and ciliate on the edge ¼ inch long. Flowers 2 or 3 in a bract. Calyx tube short, campanulate, lobes lanceolate acuminate longer than the tube and white hairy. Corolla ⅜ inch long yellow, pubescent hairy tube cylindric as long as the limb. Stamens 2 filaments glabrous, anthers ellipsoid short-tailed. Capsule ½ inch long hairy eventually glabrescent, 4 seeded. Seeds flattened cordate rounded verrucose.

Temengoh, (14531).

Allied to *J. subcymoca*, C. B. Clarke. Its bright yellow green foliage preserving its color when dry gives it a striking appearance.

Leda subcardata, Clarke.

A creeping scandent herb, with slender stems pubescent purple, internodes 3 inches long. Leaves in opposite pairs equal ovate to ovate lanceolate, acuminate obtuse above glabrous with many raphides bundles, beneath paler, nerves and midrib shortly appressed hairy, nerves 6 pairs meeting incurved within the margin, 2-2½ inches long, ¾ inch wide, petiole ¾ inch long. Compound cymes lax with slender spreading branches, from the upper axils, peduncle 1½ inch long, cyme branches 1½ inch, all pubescent. Bracts linear lanceolate ⅒ inch long. Calyx lobes linear connate at base only ⅛ inch long pubescent. Corolla pubescent pure white $\frac{3}{4}$ inch long, tube slightly dilated at the base then cylindric, upper lip nearly $\frac{1}{2}$ inch long, lower broader as long, lobes subacute. Stamens 2 filaments slender glabrous. Anthers linear oblong, pollen small elliptic rounded at the tip. Style long slender glabrous.

Abundant on the sandy banks of the Temengoh river. A very pretty plant. I was quite unable to find any fruit even young.

Polytrema vulgare, C. B. Clarke.

Common in the Temengoh and Kuala Kering woods, flowers white.

P. repens, n. sp.

A prostrate creeping herb, throwing up short erect branches 3 inches tall. Stem slender pubescent, internodes 2 inches long terete. Leaves equal ovate subacute base rounded, 1 inch long $\frac{3}{4}$ inch wide, glabrous with many raphides on both sides, dark colored above pale beneath, petiole slender $\frac{3}{4}$ inch long. Cymes terminal on the ascending branches $1\frac{1}{2}$ inch long with few short branches pubescent. Bracts very narrow linear subulate $\frac{1}{8}$ inch long pubescent. Calyx lobes linear acuminate hairy over $\frac{1}{8}$ inch long. Corolla half an inch long white, base of tube slightly dilated then narrowed, and dilated into a trumpet-shape, pubescent, lobes unequal upper lip narrow elliptic lower lip broader rounded. Stamens 2. Anther cells linear oblong, one slightly below the other muticous filaments hairy at the tip.

In woods in the hills beyond the ricefields Ulu Temengoh, nearest perhaps to *P. cupreum*, Ridl.

VERBENACEAE.

Callicarpa cana, L. Common in waste ground, Ulu Temengoh.

Premna pyramidata, Wall. Common at Ulu Temengoh in open country.

Clerodendron disparifolium, Bl. Temengoh.

Cl. deflexum, Wall. A glabrescent form with large thin leaves sinuate along the edge, Ulu Temengoh.

Vitex pubescens, Vahl. Common in open country round the village, Ulu Temengoh.

V. gamosepala, Griff. Woods and open country, Ulu Temengoh.

Peronema canescens, Jack. Very abundant at Grit and Ulu Temengoh and unusually large in the latter place, attaining a height of 40 or more feet. Mr. Berkley tells me it is known as "Sonkai" by the Malays and used as a medecine for fever. It has a bitter taste.

LABIATAE.

Hyptis suaveolens, Poit. Common in the village, Ulu Temengoh.

Plectranthus Kunstleri, Prain. On limestone rocks at Lenggong, also plentiful in sandy spots at Ulu Temengoh. I have never seen this previously except on limestone rocks.

Pogostemon Heyneanus, Benth. On banks by the track at Ulu Temengoh. I do not think there is any reason to consider this as an introduced plant only. It seemed quite wild in this locality.

Dysophylla auricularia, Bl. Common in the ricefields, Ulu Temengoh.

Leucas lavandulifolia, um.

Common in waste ground round Ulu Temengoh. *L. zeylunica*, Br. so common in the south of the Peninsula was conspicuously absent.

Gomphostemma crinitum, Wall. Common in the woods at Kuala Temengoh and Ulu Temengoh.

APETALAE.

AMRANTACEAE

Celosia argentea, L. Abundant on the rocks at Kuala Temengoh.

Aerua Curtisii, Hook. fil. At Lenggong and Temengoh.

Cyathula prostrata, Lour. Common at Grit and in the village, Ulu Temengoh.

POLYGONACEAE.

Polygonium flaccidum, Meissn. Ricefields at Temengoh and at Kota Tampan, between Temengoh and Lenggong. Common.

CYTINACEAE.

Rafflesia Hasselti, Sur.

This fine *Rafflesia* was found in flower in the woods at Kuala Temengoh and at the upper camp of Ulu Temengoh. It occurs in many parts of Perak and is collected by the Malays as a medicine. The whole flower measures 18 inches across, and the petals are of a bright red, brighter in colour than in the figure in Veth's Midden-Sumatra, when freshly opened, marked with raised white blotches. The pistils were white. It has not been recorded for the Peninsula before, although it has been known for a long time.

J. flaccida, n. sp.

Herb, with glabrous stems, except the young parts, pubescent base nude. Leaves in equal pairs flaccid light green, lanceolate to ovate lanceolate acuminate at both ends, glabrous, 5 to 9 inches long 1-3 inches wide, above minutely dotted, nerves about 8 pairs curved upwards and meeting in an intramarginal vein, petiole ½-inch long pubescent winged to the base. Spike terminal erect, subsessile 3 inches long dense, flowers, not secund. Bracts much longer than the flowers linear green nearly an inch long often edged with purple. Calyx of 5 long filiform lobes as long as the corolla tube, minutely pubescent and tipped with purple. Corolla glabrous $\frac{1}{4}$ inch long, yellow striped with purple. Lower lip lobes distinct at tip oblong. Anthers with one cell below the other, appendage conic white. Capsule $\frac{1}{4}$ inch long glabrous, seeds 4 orbicular flat verrucose light brown.

Temengoh forests. The linear bracts considerably longer than the flowers are unlike those of any other species known to me.

J. secundiflora n. sp.

A herb erect or ascending 6 to 12 inches tall, stem brown hairy. Leaves opposite subequal lanceolate obtuse or subacute, occasionally ovate, base accuminate, above dark green, thickly dotted with small white raphides bundles beneath green or purple glabrous and dotted except the nerves covered with appressed brown hairs 2-6 inches long, 2-2$\frac{3}{4}$ inch wide, petiole 1 inch long hairy. Spikes axillary or axillary and terminal usually terminal shortly $\frac{1}{4}$-$\frac{1}{2}$ inch peduncled 3 inches long, rachis brown hairy, flowers numerous closely secund, sessile. Bracts lanceolate oblong subacute 4 $\frac{1}{4}$ inch long dark purple pubescent. Calyx lobes narrow lanceolate linear acuminate as long as the corolla tube glabrous pale with purple dots. Corolla $\frac{3}{8}$ inch long, glabrous, tube cylindric rather thick as long as the limb, bright yellow with purple dots on the lower lip and in the tube, lobes of the lower lip minutely velvety. Stamens 2 shorter than the corolla, filaments rather stout. Anther cells very unequal, the lower one adnate nearly at the lowest point of the upper one, light brown, the appendage white cylindric conic that of the lower cell longest. Anthers dehiscing only in the lower third.

Very common all over the Temengoh woods and very variable, sometimes quite a low almost prostrate plant, at others tall and flaccid. In some forms the leaves are in part quite ovate, almost rotund, in others elongate lanceolate long acuminate at both ends, some have the leaves green on both sides, others purple beneath (14530).

J. uber, Clarke. Lenggong.

J. ptychostoma, Nees. Kuala Kenering.

J. subcymosa, Clarke var *lanceolata*.

Leaves lanceolate acuminate at both ends, decurrent on the petiole glabrous on both sides except for some pubescence on the nerves.

Lenggong, very different in appearance from the ovate leaved plant of the Batu Caves in Selangor, the base of which leaves is broad and rounded.

J. Gendarussa, L. Common in the Campong at Ulu Temengoh.

J. Neesiana, Wall.

A small shrubby plant much branched, 2 feet long with long internodes, and dilated nodes. Leaves opposite unequal lanceolate acuminate at both ends, glabrous above, covered with appressed hairs beneath on the midrib, petiole and young parts of the stem, nerves 3 pairs elevated beneath, 2-3 inches long $\frac{3}{4}$ inch wide, petiole $\frac{1}{4}$ inch long. Flowers four or 5 in axillary tufts sessile. Bracts minute caducous lanceolate. Sepals lanceolate acuminate pubescent free nearly to the base $\frac{1}{8}$ inch long. Corolla white $\frac{1}{5}$ inch long pubescent, tube cylindric, lobes half as long upper lip linear oblong, lower broader rather fleshy, 3 lobed, lobes blunt, median lobe truncate. Stamens 2, filaments rather broadly oblong, anthers grey with one cell above the other, tailed, glabrous. Style glabrous. Capsule cylindric at first not dilated above glabrous, solid portion half its length, ¼ inch long. Seeds 4 oblong elliptic brown minutely pustular. Retinacula short blunt.

Temengoh. Grit and Kuala Kenering (14527, 14528).

Abundant along the edges of streams forming thick clumps. The smaller leaf is about half as big as the larger one. I suppose this to be the *J. Neesiana*, Wall. of the Materials. The bracts in the description in the Flora of British India are described in all of this set as obovate or spathulate, but in a plant named *J. quadrifaria*, Wall. by Clarke they are lanceolate acuminate.

J. sessilis, n. sp.

A weak, long creeping ascending herb, young parts pubescent. Leaves unequal in distant pairs, large one lanceolate to ovate acuminate, base rounded somewhat unequal sessile, 1½-3 inches long, ½-1¼ inch wide, nerves primary about 6 pairs, quite glabrous, small leaf ovate cordate ¼ inch long. Racemes axillary ½-1 inch long with a slender pedicel and 3 or four terminal flowers. Bracts minute linear lanceolate. Flowers ¼ inch long. Calyx half as long as the corolla, sepals narrow linear acuminate pubescent. Corolla tube oblong cylindric pubescent, lobes as long as the tube, lower lip broad 3 lobed, lobes truncate rounded. Stamens shorter than corolla. Anther cells linear oblong one above the other, shortly tailed Capsule ½ inch long pubescent, solid portion long. Seeds four flattened rounded reniform minutely pustulate.

Ulu Temengoh (14529).

Mr. Clarke describes in the Materials several species of this section from the collections of Kunstler which I have not seen. The nearest of these is *J. otophora*, of which the description is very incomplete. However, the plant described above is pubescent and the stem is not zigzag and on the whole I do not think this can be the plant intended by him.

ARISTOLOCHIACEAE.

Thottea parviflora n. sp.

A shrub about 3 feet tall, the stems nearly ¼ inch thick, shortly pubescent with stellately arranged hairs. Leaves ovate or obovate acute, base shortly narrowed, 8 inches long or less 4 inches across, above glabrous, beneath sprinkled with short white hairs, petiole thick ¼ inch long. Racemes extra axillary half an inch long, hairy. Flowers crowded, appearing singly small violet. Bracts ovate very small, hairy. Pedicel hairy ¼ inch long. Perianth ¼ inch across, lobes ovate obtuse, violet hairy outside, tube short campanulate. Stamens 16, filaments very short hairy, anther oblong extrorse. Style 5 lobed. Fruit slender 2 inches long ending in a long point.

Temengoh hill woods, very distinct from any species known to me by its small pale violet flowers.

There is really very little difference between the genera *Thottea* and *Bragantia* and the chief one lies in the number of the stamens which is larger in *Thottea*. The greater size of the flowers as a distinctive character fails with *Th. parviflora* whose flowers are smaller than those of the next species.

Bragantia tomentosa, Benn. Abundant in damp shady spots in the Temengoh forests.

PIPERACEAE.

The collection of Peppers in the Singapore herbarium have been recently identified by M. C. De Caudolle and from his identifications I have named the peppers got in this expedition. I am not aware that his descriptions have been as yet published so that some of these will be his manuscript names.

Piper porphyrophyllum, N. E. Br. Common in the Temengoh woods, as it is all over the peninsula.

P. mucronatum, C. De Cand., a single specimen at Lenggong.

P. stylosum, Miq. Common in the Temengoh woods, some of the specimens larger than usual (14504).

P. Ridleyi, C. De Cand. Temengoh woods (14502), also collected at Thaiping near the waterfall on the return journy (14503).

P. malamiri, Bl. Climbing on trees at Temengoh (14501).

P. miniatum, Bl., with the last (14496).

P. longibracteum, C. De Cand., or near Temengoh.

P. erecticaule, C. De Cand., or allied; a low erect bush in dark damp woods near Ulu Temengoh, rare, (14497).

P. curtisii, De Cand. Temengoh (14497), I am a little doubtful as to this as the venation is different from the type plants from southern Perak and Selangor. The leaves have the three veins from the base prominent to the end of the leaf and the side veins conspicuous in the type are practically invisible, I have exactly the same form from Kopah in Siam (12637) of my collections.

Heckelia subpeltata, Kunth. Not rare in the Temengoh woods.

CHLORANTHACEAE.

Chloranthus officinalis, Sw. Common, Temengoh woods.

LAURINEAE.

Two species of *Cinnamomum*, and two or three *Litseas* were obtained at Ulu Temengoh, but I am unable to identify them as the whole collection of *Laurineae* of Botanic Gardens herbarium is at present with Mr. Gamble who is working at them for the flora.

One of the *Cinnamomums* was a small bushy tree on the banks of the Temengoh river. It had very narrow leaves.

LORANTHACEAE.

Loranthus heteranthus, Wall. Abundant on Durian trees at Ulu Temengoh village.

L. formosus, Bl. Fallen flowers of this handsome mistletoe were found in the Ulu Temengoh woods.

EUPHORBIACEAE.

Euphorbia thymifolia, Burm, Common on rocks at Kuala Temengoh.

E. pilulifera, L. Temengoh.

Phyllanthus pulcher, Wall. (*Reidia glaucescens*, Miq.) Common on the banks of the river in the village, Ulu Temengoh.

Ph. urinaria, L. Rocks at Kuala Temengoh.

Ph. simplex, Retz. Kwala Kenering.

Ph. frondosus, Wall. Ulu Temengoh.

Fluggea microcarpa, Bl. A common shrub all along the Temengoh river, especially on the rocks and islets.

Brynia discigera, Muell-Arg. Ulu Temengoh.

Br. rhamnoides, Muell-Arg. Ulu Temengoh, the leaves are much larger than the size given in the Flora of British India, viz. ¾ to 1 inch long; they are commonly 3 inches long.

Glochidion obscurum, Bl. Small tree, Temengoh.

Aporosa stellifera, Hook. fil. Tree, Ulu Temengoh.

Antidesma salicifolia, Miq. River banks, Sungei Kertai and the Temengoh river.

A. pendulum, Hook, fil. Ulu Temengoh.

A. sp. in fruit only, with elliptic cuspidate leaves, 6 inches long and very slender spikes of fruit 5 inches long fruit ovoid. At Lenggong. I do not recognize this species.

Croton Cumingii, not common at Temengoh.

Acalypha fruticosa, Forsk. Low compact shrub in a village near Temengoh.

In Grit we saw this cultivated in the form of a low hedge. Its leaves are used by the Malays as a substitute for tea.

Alchornea villosa, Muell. Large shrub at Ulu Temengoh.

Trigonostemon longifolius, Baill. Woods by the Kertai river.

Erismanthus obliqua, Wall. Kuala Kenering.

Mallotus macrostachyus, Muell. Common at the village of Temengoh.

M. barbatus, Muell. At Kuala Kenering.

M. floribundus, Muell. Small tree overhanging the rivers, Temengoh and Kertai, abundant.

M. porterianus, Muell. Woods by the Sungei Kertai.

M. sp. Lenggong.

Macaranga trichocarpa, Muell. Common at Ulu Temengoh.

M. hypolenca, Muell. Ulu Temengoh.

Homonoia riparia, Lour. A common and conspicuous shrub on the islands, rocks and banks of the river from Ulu Temengoh to Kuala Kenering.

Cnesmone javanica, Bl. This objectionable stinging climber was abundant climbing over bushes round Ulu Temengoh village.

Sebastiana chamoelea, Muell. Arq. Kuala Kenering.

Excoecaria quadrangularis, Muell. Rocks at Kuala Temengoh and Lenggong.

URTICACEAE.

Balanostreblus ilicifolius, Kurz. Lenggong.

Trema amboinensis, Bl. Ulu Temengoh.

Artocarpus lanceæfolius, Roxb. The Keledang was plentiful about Ulu Temengoh.

Ficus chartacea, var *torulosa*. Woods, Temengoh.

F. pomifera, Wall. Damp spots and islands, Sungei Kertai.

F. pyriformis, Hk. & Arn. Rocks in the river Temengoh. The same narrow leaved form as I got at Telom.

F. ramentacea, Roxb. On trees, Uulu Temengoh.

F. obscura, Bl. With leaves more hairy than usual, Ulu Temengoh.

F. hispida, L. Temengoh.

F. subulata, Bl. Common, Temengoh.

F. quercifolla, Roxb. var , Ulu Temengoh.

T. brachiata, King? At Kuala Temengoh.

F. geocarpa, Teysm. Ulu Temengoh.

F. alba, Reinwdt. Temengoh village.

Ficus cordata, n. sp.

Shrub, branches and young parts covered with rough red bristly hair. Leaves ovate cordate cuspidate margins dentate very hairy on both surfaces with long yellowish hairs, nerves 5 pairs, 7 inches long, 4½ inches wide, petiole slender 2-3½ inches long hairy. Figs sessile ½ inch long, solitary elliptic densely covered with long red hairs, those surrounding the mouth peculiarly long and dense. Bract small lanceolate. Bracteoles of mouth narrow oblong truncate numerous. Male flowers not seen. Female flowers gamosepalous with a long style. Achene sub-reniform flattened, keeled, and verrucose on both sides.

Temengoh.

A very curious species allied to *F. chrysocarpa*, but peculiar in its long petioled cordate leaves, (the young leaves are not cordate but entire at the base), and its achenes. The fruit was quite ripe when it was collected.

Boehmeria lanceolata, n. sp.

A shrub, stems covered with short white appressed hairs. Leaves opposite lanceolate acute base truncate rounded margins serrate, above quite glabrous, minutely pustular, beneath glabrous except the main nerves which bear short appressed white hairs, nerves 3 from the base, the midrib branching with 2 side nerves above, secondary nerves sub-horizontal with few reticulating nervules, 6 inches long $1\frac{3}{4}$ inch wide. Petiole 1 inch long. Flower clusters in simple spikes, 4 inches long solitary axillary. Bracts lanceolate acuminate glabrous. Rachis pubescent, clusters $\frac{1}{8}$ inch across, about half their width apart or closer. Bracts of clusters ovate cuspidate. Male flowers minute 5 lobed. Female flowers sessile hairy urceolate swollen in fruit.

Sandy islet in the Kertai river, Temengoh.

Conocephalus subtrinervius, Miq. Male plant, Ulu Temengoh.

C. amoenus, King. Common, Temengoh.

C. Scortechinii, King. Temengoh, on an old tree by the river.

Peliionia Duvauana, N. E. Br., and the var *viridis*. Common on banks, Temengoh woods.

P. javanica, Wedd. Woods by the Sungei Kertai and Temengoh river.

P. acaulis, Hook. fil. Banks in forest, Temengoh.

P. elatostemmoides, Wedd. Lenggong.

Elatostemna sessile, Ferst. Lenggong.

Procris frutescens, Bl. Temengoh.

Pouzolzia viminea, Wedd. Shrub, Kertai river.

P. indica, Gaud. Common in the village, Ulu Temengoh.

JUGLANDEAE.

Engelhardtia spicata, Bl. Common in the Temengoh forests by the river. A very fine large tree reminding one of the Ash-tree, not previously recorded from the peninsula, occurring in India to Tenasserim, Java and Cochin-China.

Quercus minor, n. sp.

A small sized tree for the genus about 20 feet tall. Leaves oblong oblanceolate acuminate acute, narrowed towards the base, obtuse, entire coriaceous dark shining green, quite glabrous, nerves depressed above elevated below, 14 pairs; 8 to 11 inches long, 2 inches wide, petiole thick $\frac{1}{4}$ inch long. Panicle terminal large a foot long, spikes 6 inches long, rachis thickly velvety. Bracts and bracteoles lanceolate acuminate glabrous. Male flowers crowded towards the apex of the spike, more separate below. Perianth of 4-5 short rounded lobes densely hairy, disc pullvinate hairy. Stamens glabrous 8. Bracts elongate linear acuminate, usually slightly hairy. Fruit sessile distant or crowded. Cupule saucer shaped, margin revolute very shallow, outside covered with short bracts irregularly placed triangular with a short point, all velvety and hardly distinct, cupule inside finely silky, $\frac{3}{4}$ inch wide, barely covering $\frac{1}{8}$ of the nut. Nut smooth glabrous yellow ocre. Ovoid cylindric, apex rounded, one inch long, $\frac{3}{4}$ inch in diameter.

Ulu Temengoh, open country near the village.

One of the smallest sized oak trees I have seen in the peninsula. It seems most nearly allied to *Ov. spicata*, Sm. which is indeed a very variable plant.

SALICINEAE.

Salix tetrasperma, Roxb. Along the ricefields all over this district. Lenggong, Temengoh, etc.

GNETACEAE.

Gnetum neglectum, Bl. Kertai River, Ulu Temengoh.

ORCHIDEAE.

Oberonia stenophylla, Ridl. A single plant found at Ulu Temengoh; only previously recorded from Johor.

Liparis Wrayi, Hook. f. In shady woods along the banks of the Sungei Kertai.

L. comosa, Ridl. On trees in islands of the river, Kertai.

L. flaccida, Lindl.

Dendrobium quadrangulare, Rchb. fil. Trees in orchards at Ulu Temengoh both with pale yellow, and red streaked flowers, also at Kuala Kenering.

D. serra, Lindl. Common, Ulu Temengoh.

D. atropurpureum, Miq. Trees, Ulu Temengoh.

D. tuberiferum, Hook. fil. Common on trees at Ulu Temengoh, much commoner than the next.

D. crumenatum, Sw. Not common, Ulu Temengoh.

D. serpens, Hook. fil. On a tree on an island in the Kertai river.

D. viridicatum, Ridl. On trees in the orchards at Ulu Temengoh. This appears to be not uncommon in this district. I saw it in full flower at Thaiping in Mr. Hobson's garden. The flowers which are apple green expand rather widely, the acute petals and sepals recurving. The lip is similar in shape entire acuminate, and as long as the petals rather less than half an inch long. The column bears two conspicuous thick rounded stelidia bright yellow in colour. The stigma is broad, and the anther cap rather tall and conic, the top flattened laterally and obtuse. The rostellum in my specimens is absent, and the pollinia fallen into the stigma. The plant appears to be self-fertilized.

D. hercoglossum, Rchb. fil. On a tree over-hanging the Temengoh river, in fine flower.

D. serpens, Hook. fil. On a tree in the Sungei Kertai. The petals a little broader and more truncate and the lip having a tendency to become bilobed but I think specifically identical.

Bulbophyllum odoratum, Lindl. Trees on the islands in the Temengoh River above Ulu Temengoh village.

Eria stellata, Lindl. Trees in the orchard at Ulu Temengoh in full flower.

Agrostophyllum majus, Hook. fil. Trees on the banks of the Sungei Kertai.

Plocoglottis javanica, Bl. Common in the woods by the Sungei Kertai and Temengoh.

Coelogyne asperata, Lindl. Abundant and large along the Sungei Kertai, on trees. In flower.

C. speciosa, Lindl. Forests of Ulu Temengoh.

Eulophia squalida, Lindl. Damp spots by the rice fields, Ulu Temengoh.

Geodorum citrinum, Jack. Woods near Grit.

Cymbidium pubescens, Lindl. Orchards, Ulu Temengoh.

Adenoncos virens, Bl. Trees by the river, Ulu Temengoh.

Doritis Wightii, Benth. At Kuala Kenering.

Rhynchostylis retusa, Bl. Mr. Hobscn sends this from Grit where also I saw plants cultivated from the neighbourhood, not known previously south of Lankawi.

Saccolabium Hobsoni, n. sp

Stem very short and stout 2 inches long. Leaves coriaceous oblong 6 to 8 inches long 3 inches wide, bases broad, apices very unequally bilobed lobes rounded. Spikes panicled sessile, or simple, 4 inches long, floriferous to the base: rachis stout. Flowers densely set sessile, gradually opening as the spike lengthens (to as long as 3 inches) so that a spike may bear flowers and fruits simultaneously. Bracts lanceate caudate. Sepals and petals ovate obtuse lemon yellow with red purple spots in lines at the base: lower sepals curved forward and more spotted. Lip shorter than sepals, side lobes ovate very short, but distinct, midlobe short ovate, spur large scrotiform with an oblique low ridge on either side of the mouth, at the base of the side lobes and a thin membranous crescent shaped callus at the back below the column. Column short. Anther hemispheric with an upcurved beak, pollinia globular with a narrow lanceolate pedicel tapering to both ends, and a narrow ovate lanceolate disc.

Lenggong. I also saw plants in the gardens at Thaiping of which Mr. Long brought me one. It had been obtained in abundance at Slim, by Mr. Hobson with whose name it is associated. This plant is allied to *S. uteriferum*, Ridl. *Cleisostoma uteriferum*, Hook. fil. which is figured in the Annals of the Botanic Gardens Calcutta vol. 5. Pl. 84 from a drawing and some flowers obtained by Kunstler. I have seen no specimen but assuming that the drawing is correct, *S. Hobsoni* differs from it in the more distinct side lobes, the crescent-shaped callus, that of *C. uteriferum* being long, entire and tongue-shaped, and the beaked anther.

Saccolabium hortense, Ridl. Temengoh.

Saccolabium sylvestre, n. sp.

Stem 3-8 inches long rather weak. Leaves linear oblong apex acute base slightly narrowed, 3-4 inches long ½ inch wide rather flaccid, sheath dilate upwards ribbed keeled ¼-½ inch long. Raceme slender 4-6 inches long angled lax, flowers small numerous. Bracts ovate acute $\frac{1}{20}$ inch long. Flowers nearly ¼ inch long to tip of spur, pedicels short. Upper sepal ovate cymbiform, laterals ovate orbicular, slightly falcate. Petals narrower oblong obtuse all. Lip yellow with red streaks, side lobes erect oblong truncate, as long as the column, midlobe much narrower linear acuminate. Spur longer than pedicel or as long cylindric, dilate in the middle and narrowed slightly below, apex dilated broad saccate yellow with red streaks. Calli apparently none. Column short. Pollinia globose, pedicel long racket-shaped, base long slender almost filiform, gradually dilated above into a elongate triangle with a double emargination for the pollinia, rostellar lobes erect oblong.

In woods at Temengoh on tree-trunks nearly out of flower.

Perhaps nearest to *S. penangianum*, Hook. fil. but very distinct in its large oblong almost quadrate side lobes to the lip and the long blunt spur.

Taeniophyllum serrula, Hook. fil. Trees, Temengoh and Kuala Kenering.

T. gracillimum, Ridl. Forests, Temengoh.

Pelatantheria cristata, Ridl. Temengoh.

The flower, only one and that unopened which I found is much smaller than in the type, but this may be due to its being very young.

Ascochilus hirtulus, Ridl. One plant, Temengoh.

Thrixspermum arachnites. Scrambling over branches of trees at Temengoh village, the long straggling form.

Dendrocolla filiformis, Ridl. Temengoh one plant.

D. trichoglottis, Ridl. On guava and lime trees at Temengoh village.

D. pardalis, Ridl. Ulu Temengoh.

Podochilus tenuis, Lindl. Common on the Sungei Kertai.

P. anceps, Schlecht. Trees overhanging the Sungei Kertai.

P. callosa, Schlecht. Temengoh.

Pogonia punctata, Bl. In leaf only. Orchards at Temengoh village.

Aphyllorchis pallida, Bl. Abundant along the Track at the upper camp 8 miles from Temengoh village.

Corymbis longiflora, Hook. fil. Woods by the Kertai and Temengoh rivers.

Vrydagzynea albida, Bl. Wet swamps in forest, Ulu Temengoh.

Zeuxine palustris, n. sp. Roots rather long woolly, whole plant 15 inches tall slender. Leaves 5 ovate obtuse thin glabrous, with 3 conspicuous nerves the rest invisible, 1 inch long, ½ inch wide, petiole ¼ inch long, upper-part of stem pubescent, nude except for 2 lanceolate acuminate sheaths. Raceme 3 inches long about 12 flowered. Bracts lanceolate acuminate $\frac{3}{16}$ inch long, shorter than the ovary. Flowers ⅛ inch long. Sepals narrow lanceolate acute glabrous, reddish, upper one connate with the thin white petals. Lip base saccate narrowed towards the limb but hardly clawed, limb bilobed with two oblong divaricate lobes little longer than the sepals, white. Callus in the sac small oblong conic emarginate. Column short. Rostellar arms long, apparently hooded at the apex, blunt.

In a grassy swamp in the Temengoh woods with *Vrydagzynea*. Only a single plant could be found.

Allied to *Z. affinis*, Benth. and *Z. clandestina*, but the flowers are smaller than in the former, and the foliage and habit quite different.

Stereosandra javanica, Bl. Two plants along a new cleared track by the Temengoh river.

SCITAMINEAE.

Globba pendula, Roxb. A form with blood-spotted sheaths like those of *Gl. Wallichii*, Bak. Woods Ulu Temengoh.

Gl. fasciata, n. sp.

About 2 or 3 feet tall, the base nude except for a few sheaths. Leaves about 8 lanceolate long acuminate caudate narrowed at the base glabrous, 7 inches long, one inch wide dull dark green with a silver median bar, back paler, ligule short rounded truncate with pubescent edges, sheaths glabrous, striate. Panicle 6 to 9 inches long, branches numerous ½ inch long, with very short branchlets at the tip bearing 2 to 3 flowers. Bracts caducous narrowly lanceolate acuminate green, more than half as long as the peduncle. Bracteoles (floral bracts) small ovate orange yellow. Calyx rather broad funnel-shaped with 3 equal lanceate acuminate teeth about half as long as the tube, orange. Corolla tube twice as long as the calyx slender. Petals boat-shaped oblong. Staminodes ovate rounded shorter and broader. Tube above corolla slightly longer than the petals. Lip as long, blade narrow with a narrow linear base and two deeply cut spathulate rounded lobes. Filament long, anther with two slender spurs, base broad passing into a linear acuminate point, from the base of the elliptic anther and longer than it, whole flower orange. Capsule globose sometimes obscurely rounded triquetrous crowned by the persistent calyx, $\frac{1}{10}$ inch long, smooth. (No. 14415).

Banks of woods by the Temengoh river. This species is allied to *G. pendula* differing in the form of the leaves and staminodes, and the lip. The foliage-coloring resembles that of *G. albiflora*, Ridl. Full sized plants are large and very floriferous, but weaker and more slender plants are often met with.

Gl. perakensis, Ridl. Dark shady hill woods, Ulu Temengoh.

Gl. cernua, Bak. Scanty, Temengoh woods.

Camptandra parvula, Ridl. Common on banks. In some spots occurred a variety with quite fleshy succulent leaves of a purple color, apparently however not specifically distinct.

Gastrochilus plicata, Ridl. Abundant in woods especially near Kuala Temengoh. Hitherto only known from a plant collected in Kuala Lebir, Kelantan, by Dr. Gimlette.

G. puberulus, n. sp.

Rhizome long creeping, yellow, tasting of musk. Leaves 2 to 3, lanceolate narrowed into the petiole, light green, apex shortly acuminate above glabrous, beneath covered with soft pale hairs, 9 to 12 inches long, petiole 6 to 8 inches long, sheathing at the base. Spike from between the leaves 2 inches long. Bracts lanceolate pubescent. Corolla tube 1½ inch long slender white; Petals oblong-linear obtuse white half an inch long. Staminodes broad oblong truncate thin white. Lip obcuneate, apex broad shortly trilobed, yellow, central ridge edged with red. Anther crest oblong retuse.

In a muddy spot on the banks of a stream Sungei Tampan, at Temengoh growing in a dense thicket of *Phoeomeria imperialis* and other gingers, not common. Allied closely to *G. longipes*, Bak. but differing in its pubescent leaves and obcuneate lobed lip.

G. biloba, Ridl. var *lanceolata*.

Leaves narrow lanceolate, narrowed to the petiole, 5 inches long, 1 to 1¼ inch wide, with fewer nerves than the type.

On dry banks by the Temengoh river. In the leaf-colouring, and the deliciously fragrant flowers, this resembles the form from the Pahang track near the Semangkok pass in Selangor, but the leaves instead of being broad and widely rounded at both ends are narrow lanceolate and acuminate at the base.

Curcuma Kunstleri, Bak.

Abundant along the river bank at Ulu Temengoh. The pale flowered form.

Costus speciosus, var. *argyrophyllus*. Common.

C. globosus, Bl. Temengoh woods.

C. Kingii, Bak. Woods at Temengoh.

Costus velutinus, n. sp.

Stems tall about 6 feet, leaf sheaths 4 inches or less long densely covered with soft silky hairs, mouth oblique long-haired, blade oblanceolate cuspidate, narrowed towards the base 9 inches long 2¼ inch wide above glabrous except for a line of hairs along the midrib, beneath softly hairy with silky hairs, cusp conspicuously white hairy. Inflorescence basal, on a stout peduncle 4 inches long covered with broad ovate oblong bracts, 1-2 inches long, hairy, the uppermost armed with a pungent mucro. Capitulum 2 inches through and nearly as long obconic, outer bracts, oblong ovate hairy, with a horny mucro swollen at the base and tapering into a sharp point, glabrous; inner bracts thinner papery, hairy except at the tip, ribbed, lanceolate. Calyx 1 inch long tubular with three nearly equal short points ending in short thorn-like mucros. Corolla tube as long as the calyx, petals and lip cherry-red large. Petals lanceolate acute 1½ inch long hairy outside glabrous within. Lip broadly obcuneate apex broad truncate 1½ inch long and as wide, hairy outside. Stamen, anther oblong hairy ½ inch, crest, oblong slightly narrowed towards the tip, margins hairy with a few long hairs. Stigma broad, with long stigmatic hairs.

Woods at Ulu Temengoh.

The strongly pubescent-hairy stem of this plant, with the habit of *C. Kingii* is somewhat striking. The pubescent inflorescence, and flowers makes it very distinct. Though not rare very few plants were seen in flower, which is frequently the case in this set of *Costus*.

Zingiber spectabile, Griff. Extremely abundant and in fine flower all over the district.

Amomum uliginosum, Koen. In the upper camp, along the Temengoh river, among *Phoeomeria imperialis*, Lindl.

Amomum squarrosum, n. sp.

Leafy stems 4 to 5 feet tall, leaves linear lanceolate acuminate with a long point, above glabrous beneath hairy pubescent 10-15 inches long 1 to 1½ inch wide, petiole 1-¾ inch long glabrous slender ligule oblong apex rounded, hairy. Scapes 2-6 inches long, covered or partially so with lax glabrous, sheaths pubescent when young, apices rounded split on one side. Spike dense obconic in flower 2 inches long, in fruit lengthening cylindric nearly 4 inches long and 1½ inch through. Basal bracts oblong-ovate apex rounded pubescent, ¾ inch long. Floral bracts ovate acuminate glabrous ribbed in fruit coriaceous, polished inside, greenish white recurved. Calyx tubular dilated slightly upwards, with 3 short equal teeth. Corolla tube as short as the calyx tube, lobes oblong rounded at the tip ¼ inch long. Lip longer than the petals fleshy, narrowly obovate, apex rounded entire, base narrow linear. Stamen, filament linear, anther oblong with the two upper corners excurved with two curved linear arms apex retuse pubescent, crest very short entire rounded hardly longer than the anther. Capsule globose pale smooth glabrous, faintly ribbed at the apex, ½ inch long.

Perak. Tapah (Ridley 14026), (Wray 1412); Temengoh woods by the river. Selangor, between Kuala Kubu and Semangkok Pass at the 15th mile (Ridley).

There is also a specimen in Cantley's collection without locality probably from Negri Sembilan or Selangor, and labelled Pua Tadah Umbon. The leaves are made into poultice and applied in cases of giddiness. Though this plant does not seem to be rare, I have not had the luck to find good flowering specimens, and the flowering specimens I have seen, Wray's and Cantley's are in poor state.

The flowers are quite small and hardly project beyond the bracts, which in fruit are comose, somewhat after the manner of those of a Curcuma but somewhat stiffer, giving the fruiting spike a striking appearance.

Hornstedtia megalochilus, Ridl. Abundant in the damp spots by the river, forming thickets.

Phoeomeria (*Nicolaia*), *Maingayi.* Ridl. Woods by the Temengoh River, Ulu Temengoh.

Plagiostachys lateralis, Ridl. Damp spots in streams in dense forests, Ulu Temengoh.

Elettariopsis pubescens, Ridl. Abundant under trees in the Kampong of Ulu Temengoh, not in flower.

MARANTACEAE.

Donax grandis, Ridl. Common in all the woods.

D. arundastrum, Lour. Forming thickets by the river bank.

Stachyphrynium Jagoranum, Schum. Abundant under trees in the Kampong, Ulu Temengoh.

Phrynium hirtum, Ridl. Abundant in damp spots in forests.

Ph. terminale, n. sp.

A tufted plant, with elliptic or elliptic lanceolate leaves, apex acute base rounded, glabrous 18 inches long, 6 inches wide, shining green above purple beneath, very fine nerved, the nerves very conspicuous when dry, petiole over 8 inches long, the knee 2 inches not very thick; capitulum on a peduncle 18 inches long, with no trace of a subtending leaf. Flowers not seen. Bracts, two outer broad oblong truncate, the basal one 1½ inch long, 1 inch wide with a broad base, the upper ones oblong breaking up into fibrils. Capsule shortly pedicelled, pedicel ½ inch, oblong truncate with a flat top obscurely 3 angled half an inch long, ¼ inch wide, three-seeded, minutely pubescent. Seed oblong nearly half an inch long, ¼ inch through, whitish grey, the back smooth flat, the inner face obscurely angled, the aril small bilobed.

Woods at Temengoh and Lenggong.

A striking plant from its finely coloured leaves, dark green undulate above and deep red purple beneath. It is the only species I have yet seen in the peninsula in which the inflorescence is not subtended by a leaf. I sought in vain for flowers, all the plants were in fruit.

LOWIACEAE.

Lowia longiflora, Scort. Extremely abundant all over the woods, no flowers seen. The plant seems in a wild state to flower very rarely. The only time I have seen it flowering well, was on one occasion where I found a number of plants had been chopped over in clearing the forest in Selangor.

MUSACEAE.

Musa violascens, Ridl. Scattered about in the forests at Ulu Temengoh, I only saw the remains of flowers once, and it was clearly this species. It was scanty and the plants were poor. Possibly the elephants had devoured most of the big plants.

AMARYLLIDEAE.

Curculigo latifolia, Dryand. var. *glabrescens*. Common at Temengoh.

Crinum defixum, Ker. On rocks in the river below Kuala Temengoh.

BURMANNIACEAE.

Burmannia coelestis, Don. Grit.

TACCACEAE.

Tacca cristata, Jack. Not common, woods at Ulu Temengoh.
T. vespertilio, Ridl. Common under orchard trees in the Kampong of Ulu Temengoh.

DIOSCOREACEAE.

Dioscorea sativa, L. Ulu Temengoh about the kampong. In flower.

D. Dœmona, Roxb. In the Kampong, Ulu Temengoh.

LILIACEAE.

Chlorophytum orchidastrum, Lindl. Woods by the river, between Kuala Temengoh and Ulu Temengoh.

Dianella ensifolia Ridl. Woods, Temengoh.

Dracaena terniflora, Roxb. Ulu Temengoh.

Dr. sp. A very fine tree *Dracaena* about 30 feet tall, branched with erect-branches and large linear leaves, grew at the upper Camp, Ulu Temengoh, but bore no inflorescence. It was possibly *D. brachystachys*, Hook. fil.

ROXBURGHIACEAE.

Stichoneuron caudatum, n. sp.

A low herb about a foot tall, with a few branches, slender glabrous. Leaves thin elliptic acuminate base rounded, alternate, main nerves 3 pairs nervules horizontal straight finely branched not reticulate, 3 inches long, 1¾ inch wide, petiole ¼ inch long. Inflorescence axillary, peduncle filiform 2 inches long. Pedicels crowded at the tip 5 slender, half an inch long one-flowered. Bracts broadly lanceolate subacute, margin papillose $\frac{1}{10}$ inch long. Perianth lobes 4 connate at base, triangular caudate pubescent ⅛ inch long, purple. Stamens 4 connate at the base and adnate to the perianth, filaments broad oblong papillose pubescent.

Anthers dorsifixed extrorse elliptic broad 2 celled with a ridge between the cells, orange. Ovary superior subglobose ovoid, green, style none, stigma minute conic subcapitate.

Banks of the track, Ulu Temengoh.

The genus *Stichoneuron* has hitherto been represented by a single species from North India. The addition of another species from the Malay Peninsula is of considerable interest.

This new species differs from *S. membranaceum* in its smaller size, the curious tailed petals, and the solitary stigma.

The position of the genus has always been puzzling, and all the more so as the fruit of the type species has never been found, though it appears to be by no means rare in the Himalayas. I sought in vain for the fruit of the new species, and though the plant was abundant in the Ulu Temengoh not even a young fruit was to be found. The nervation and the inflorescence are certainly like those of *Roxburghia*, but there the resemblance ceases, and the plant otherwise does not resemble a monocotyledon at all. Its relationship is certainly very puzzling.

COMMELINACEAE.

Pollia sorzogonensis, Endl. Abundant in the woods Temengoh.

Commelina obliqua, Ham. River bank at Ulu Temengoh not in flower.

Aneilema nudiflorum, Br. A large fleshy form with big rosettes of leaves, on sand banks in the river Ulu Temengoh.

A. conspicuum, Kunth. Woods Ulu Temengoh.

Aneilema clandestinum, n. sp. A weak decumbent herb slender 12-inches long, base procumbent rooting. Leaves distant narrowly lanceolate acuminate base broad, margins undulate denticulate 2 inches long ¼ inch wide, sheath ¼ inch long hairy as is the base of the leaf with white leaves. Flowers solitary axillary on a short peduncle with 2 lanceolate having leaflike bracts ¼ inch or more long. Flower very small ⅙ inch long white. Sepals lanceolate obtuse. Petals subsimilar oblong lanceolate, Stamens 3, filaments densely hairy with silky hairs, anthers linear oblong yellow, staminode one much smaller, cells ovoid. Capsule linear oblong ¼ inch long greenish terminated by the persistent style subtriquetrous three celled, seeds in a single row of 6 in each cell oblong quadrate dark red brown punctate.

In a wet grassy swamp in the woods by the Temengoh river at Ulu Temengoh. The very small axillary flowers close by midday.

Cyanotis capitata, Clarke. On the banks of the Temengoh river at Ulu Temengoh, abundant in one spot. This little creeping plant seems never to have been fully described from living plants, and the colour as given in the books is blue or light-blue as is the case in most species of the genus. They are however pure white. The calyx lobes lanceolate green acute, petals shorter than the stamens ovate acute white. Stamens 5 or 6, filaments white tipped with violet, covered with long white hairs. Anthers orange. The little flowers open in the early morning and close before midday.

I have only met with it previously near the Batu Caves. Kuala Lumpur, and at Pulau Jellam on the Pahang river.

Floscopa scandens, Lour. A weak form with a small panicle. In a swamp in the Forest at Ulu Temengoh.

Forrestia gracilis, Ridl. Woods at Ulu Temengoh.

F. marginata, Hassk. Woods at Lenggong.

F. monosperma, Clarke. Forests between Kuala Temengoh and Ulu Temengoh.

PALMAE.

Palms were by no means as abundant here as they are in most parts of the peninsula.

Pinanga Scortechinii, Becc. Woods Temengoh.

P. disticha, Bl. The form with much divided leaves. Woods Ulu Temengoh.

P. subruminata, Becc. Woods along the Sungei Kertai, Temengoh.

Nenga macrocarpa, Scort. Ulu Temengoh.

Orania macroclados, Mart. Scantily scattered through the forests.

Iguanura Wallichiana, Hook. fil. common in forest Ulu Temengoh.

Didymosperma Hookeriana, Becc. Lenggong.

Caryota mitis, Lour. A few young plants in the forests near the upper camp Ulu Temengoh.

Licuala Kunstleri, Becc. In the Ulu Temengoh forests. A dwarf palm with quite a short stem, almost stemless.

Eugeissona tristis, Griff. The Bertam occurs on the tops of hills at Ulu Temengoh but was not very abundant.

Doemonorops angustifolius, Mart. Banks of the Temengoh river.

Calamus castaneus, Griff. Forests at Ulu Temengoh.

C. pencillatus Roxb. (C. javensis,) Bl. Woods Temengoh. Var *purpurascens* scanty in same woods.

C. ornatus, Bl. River bank at Temengoh. The fruits very dark in colour, almost black.

Plectocomia Griffithii, Becc. By the Temengoh river towards Kwala Temengoh.

Korthalsia, young plants of perhaps *K. polystachya* Mart. were seen here and there in the forests.

AROIDEAE.

Pistia stratotes, L. common in ditches near Lenggong.

Cryptocoryne affinis, N. E. Br. In shallow streams on gravelly banks thickly covering them with a mat of leaves. The spathe appears always to lie horizontal and practically under the water, at least I never saw it erect. The bullate leaves purple beneath, dark green above are very characteristic, and the spirally twisted white and purple lamina is very unlike that of other species. Abundant in the stream behind the rest house at Grit and in a stream at Ulu Temengoh.

Arisaema Roxburghii, Ulu Temengoh.

Amorphophallus Prainii, Hook fil. What appeared to be this was abundant in leaf round Temengoh and in all the woods to Lenggong.

Alocasia denudata, Engl. Common about Temengoh.

Homalomena coerulescens, Jungh. Woods Temengoh.

H. pumila, Hook. fil. and its variety *Purpurascens* were common in damp spots on banks at Temengoh.

H. undalatifolia, n. sp.

A small tufted plant, leaves ovate narrowed slightly at the base or rounded, apex acute or cuspidate, margins undulate curved in on the under surface so as to appear crenulate from above, glabrous grey above when dry, paler beneath, nerves invisible above, 4 pairs beneath elevated ascending towards the tip somewhat, straight 1½ inch long ½-¾ inch wide, petiole slender half an inch long. Peduncle slender very short under half an inch long, spathe ovoid with a slender mucro, ¼ inch long. Spadix shorter than the spathe nearly sessile. Male portion twice as long as female, conic gradually tapering upwards, acute, flowers few and large, no nude portion at the base.

Female flowers about 8 in two spirals, pistil oblong stigma discoid. Staminodes few very short on the banks of Sungei Kertai.

Probably nearest to *H. humilis*, Hook fil.

H. trapezifolia, var.

This form differs from the typical *Trapezifolia* Hook fil. in the base being more distinctly narrowed, and in the general shaped of the leaves it approches *H. falcata* Ridl. and may be said to be intermediate between the two. The base of the leaf is oblique and there is a tendency to a curve in the outline as in *folcata*. With this occurred also a smaller plant with shorter and smaller leaves, 6 inches long with the petiole; in this the leaves are thinner and the nerves much less prominent.

Banks in Woods Temengoh.

H. Scortechinii, Hook fil. A variety with shorter and denser foliage than the type, the blade 3½ inches long and ½ inch wide, petiole 3 inches. Temengoh Woods.

Schismatoglottis calyptrata, Zoll. Fairly common.

Sch. Wallichii, Hook fil. Var *fasciata;* common at Temengoh.

Sch. cordifolia, n. sp.

Stem short, leaves lanceolate cuspidate base deeply cordate, lobe, rounded, 6 inches long, 3 inches wide, the lobes 1 inch long, petiole 8 inches long'sheathing for three inches. Peduncle 3 inches long or less. Spathe 2 inches, tube an inch long, limb as long elliptic cuspidate, white. Appendage conic blunt slightly narrowed toward base, ¼ inch long. Male portion narrowed gradually to the base nearly half an inch long. Flowers with more sinuous margins than in *S. calyptrata*. Female portion ¾ inch long. Pistils narrowed at base, and upward. Stigma discoid. Temengoh Woods.

In the form of the outline of the leaf this resembles *S. Wallichi*, Hook. fil. but it is distinctly cordate at the base. The inflorescence most resembles that of *S. calyptrata*.

Sch. brevicuspis, Hook. fil. Banks by the Temengoh River.

Sch. longifolia, Ridl. Woods at Kuala Temengoh.

Piptospatha elongata, Ridl. On rocks in jungle streams, Kuala Temengoh to Ulu Temengoh. Common.

Anadendrum montanum, Schott. Low down on trees, Ulu Temengoh.

Scindapus pictus, Hassk. Forests, Temengoh.

Sc. perakensis, Hook. fil. Woods, Temengoh. The spathe has not yet been described. It is creamy white, ovate cuspidate and leathery, 3 inches long and as wide, the cusp an inch long.

Raphidophora Beccarii, Engl. Rocks and banks of the Kertai river, and also the stream at Grit, growing just above the level of the stream.

R. foraminifera, Engler, Pflanzenreich Aroideae, Monsteroideae. p. 45, fig. 19. *Epipremnum foraminiferum*, Engl. Engler's Jahrb. XXXV. II.

This plant has only as yet been described from its foliage, which is sufficiently striking from its oval perforations. The plant is abundant on the Larut hills, but hitherto no flowers have been seen. I found it clothing the upper boughs of a tree overhanging the Temengoh river with flower and fruit. I give a full description of the plant. A stout climber. Leaves fleshy but drying thin dark green, ovate to lanceolate acuminate with a long point, nerves very numerous ascending towards the point, base usually cuneate, lamina perforated with one to three oblong, or elliptic perforations $\frac{1}{4}$-$\frac{1}{2}$ inch long, (many leaves are unperforate), petiole 4 to 6 inches, rather slender margined with a thin narrow wing to the top. Spathe cylindric cuspidate $\frac{3}{8}$ inch through, 2 inches long green, on a peduncle 1 inch long. Spadix sessile cylindric blunt 1$\frac{1}{4}$ long sessile. Flowers irregularly hexagonal angles rounded. Stigma pulvinate. Fruiting spadix nearly ¾ inches long. Seed pale brown aciniform, the upper end rounded, tapering gradually to the rounded base, 2 in each cell.

Lasia aculeata, Lour. Common along the river edge, Temengoh.

Pothos scandens, L. Climbing on orchard trees at Ulu Temengoh.

CYPERACEAE.

Kyllinga brevifolia, Rottb. Common, Ulu Temengoh.

K. monocephala, Rottb. Common, Ulu Temengoh.

Pycreus sanguinolentus, Nees. Rocks by the river, Kuala Temengoh and Ulu Temengoh.

Cyperus haspan, L. Paddy fields, Temengoh.

C. pulcherrimus, Willd. Paddy fields, Temengoh and Lenggong. Common.

C. diffusus, Vahl. var *pubisquama*. Woods by the river and on rocks, Ulu Temengoh.

C. Iria, L. Ricefield, Temengoh.

C. pilosus, Vahl. Ricefields, Temengoh.

C. digitatus, Roxb.. Temengoh.

Mariscus sieberianus, Nees. Kampong, Ulu Temengoh. var *evolutior*. Rocks in the Temengoh river at Ulu Temengoh.

M. microcephalus, Presl. River bank at Kuala Kenering.

Heleocharis variegata, Kunth. Paddy fields at Temengoh.

H. chaetaria, R. and S. Paddy fields, Temengoh.

Scirpus mucronatus, L. Ditches at Temengoh.

S. erectus, Poir. Paddy fields, Temengoh.

Lipocarpha argentea, A. Br. Sand banks in the river, Ulu Temengoh.

Rhynchospora aurea, Vahl. Very common in paddy fields.

Fimbristylis diphylla, Vahl. Common.

F. aestivalis, Vahl. Rocks below Kuala Temengoh.

F. miliacea, Vahl. Ricefields, Temengoh.

F. asperrima, Boeck. Woods on the Temengoh river.

Hypolytrum latifolium, Rich. Woods, Temengoh River.

Mapania palustris, Benth. Hill Woods, Temengoh.

M. kurzii, Clarke. Hill Woods, Temengoh.

M. tenuiscapa, Clarke. Hill Woods, Temengoh.

M. humilis, Naves. Woods, Temengoh.

Scleria lithosperma, Sw. Woods, Temengoh.

S. sumatrensis, Retz. Grit.

S. hebecarpa, Nees. Temengoh.

GRAMINEAE.

Paspalum conjugatum, Berg. Common on Semang clearings, Ulu Temengoh.

P. scrobiculatum, L. Not very common on sand banks in the river.

F. sanguinale, Lam. Waste ground and river banks.

Panicum colonum, L. Sand banks in the river.

P. myurus, H. B. K. Sand banks.

P. auritum, Presl. Sand banks in the river.

P. plicatum, Lam. Very common in the woods, Temengoh.

P. luzonense, Presl. Sandy paths by the river.

P. humidorum, Ham. Borders of streams, Ulu Temengoh in open country.

P. oryzoides, Sw. A big form common in woods, Ulu Temengoh.

P. distachyum, L. Open edges of forest, Temengoh.

P. ovalifolium, Poir. Woods by the river.

P. pilipes, Nees. Woods, Temengoh.

P. patens, Linn. Woods. Common.

P. (pseudechinolaena) uncinatum, Raddi. Banks by the roadside and shady spots, Ulu Temengoh.

This curious grass is a new addition to our flora. It is a native of India, Ceylon, Malaya and Tropical America. With so extensive a distribution as this it is rather remarkable that this grass has not been met with before in the Peninsula, especially as it is one of the grasses provided with hooked bristles on the outer (second) glume allowing for its dispersal by wild beasts. It attains a height of about 18 inches with distant oval spikelets, armed with hooked bristles.

Thysanolaena agrostis, Nees. Banks of the river at the upper camp, Ulu Temengoh.

Leptaspis urceolata, Br. Common in woods.

Imperata arundinacea, Cyr. The lalang though occurring in this district does not seem to be as abundant as elsewhere.

Pogonatherum saccharoideum, Beauv. On rocks in the the Temengoh river.

Pollinia gracilis, Ridl. Borders of woods and river bank, Ulu Temengoh.

Stenotaphrum Helferi, Munro. Paths through the ricefields, Ulu Temengoh.

Mnesithea rupincola, n. sp.

A tufted grass 18 to 24 inches tall with a short woody rhizome. Leaves linear acuminate into a long point about a foot long $\frac{3}{4}$ inch wide hairy beneath and on the edges, with thin rough pale hairs; ligule short rounded covered with numerous white hairs. Peduncles very slender in pairs from the upper axils, glabrous, 2 to 4 inches long usually unequal in length. Spikes slender solitary 3 inches long, $\frac{1}{8}$ inch through, pale creamy yellow, rachis joints very short turbinate shorter than the spikelets, smooth and glabrous except at the top where there is a raised ring, covered with silky white hairs. Some of the joints with 2-5 vertical grooves dark green. Spikelets 2, one narrow linear acuminate minutely pubescent with two shallow dull green longitudinal grooves abortive. Fertile spikelet $\frac{1}{10}$ inch long. Glume 1, ovate lanceolate smooth or minutely sparingly pubescent on the edge, occasionally with traces of 3 basal grooves, pale cream, tip obtuse green. Glume 2 shorter thinner ovate acuminate, with a dorsal keel is raised ridge. Glumes 3 and 4 ovate thin by a line. Anthers bright brown. Stigmatic hairs bright sienna brown.

Rocks in the Temengoh river at Ulu Temengoh. This species is most nearly allied to *M. pubescens* Ridl. of Batu Pahat, differing in the unpitted Glume I, abortive second spikelet and absence of any trace of the 3rd spikelet.

Andropogon aciculatus, Retz. Very common and forming the greater part of the surf at Grit, Ulu Temengoh, etc.

Anthistiria gigantea, Cav. Abundant. Covering considerable areas between Grit and Kuala Temengoh and to some extent taking the place of lalang in cleared open spaces.

Cynodon Dactylon, L. Sand banks in the river.

Eleusine indica, L. Common in Kampongs.

E. aegyptiaca, Desf. In the Kampong of Ulu Temengoh.

Leptochloa chinensis, Beaiw. Paddy fields, Ulu Temengoh.

Phragmites karka, Trin. River bank, Ulu Temengoh.

Eragrostis amabilis, Wight. Kampong, Ulu Temengoh.

E. elegantula, Steud. On rocks in the river below Kuala Temengoh.

Lophatherum gracile, Brngn. Woods.

Centotheca lappacea, Desv. Woods.

Gigantochloa Scortechinii, Gamble. Abundant on the hills at Ulu Temengoh.

Dendrocalamus pendulus, Ridl. The commonest bamboo all over this region from near Lenggong to Ulu Temengoh, fringing the rivers and ascending to the tops of the hills.

Dinochloa Tjankorreh, Buse. In the forests between Lenggong and Grit, in flower.

Cephalostachyum malayense, n. sp.

A slender stemmed bamboo. Leaves lanceolate to lanceolate linear acuminate with a rather long point, base broad truncate 7-8 inches long 1 inch broad at base, minutely pubescent on the back edges minutely denticulate, petiole very short and thick, ligule short bearing 3 or 4 long filaments, sheath ribbed pubescent when young. Inflorescence terminal on the ends of the branches, densely capitate solitary included in 4 to 6 broad sheaths with full sized or nearly full sized leafblades, similar to the ordinary leaves, whole, capitulum about 2 inches long and obconic in outline; one inch through. Spikelets very numerous densely packed acicular surrounded by inner bracts without laminas, and very hairy on the edges. Spikelet 2 inches long outer glume narrow lanceolate acuminate apex hairy. Second similar enclosing an abortive flower shorter narrow lanceolate acuminate, points hairy. Flowering glumes 2 thin chaffy much longer apices hairy. Grain oblong $\frac{3}{8}$ inch long cylindric smooth with a long hairy $1\frac{3}{4}$ beak inch long.

FERNS.

Alsophila trichodesma, Scort. Temengoh (14207). (*A. latebrosa* according Beddome).

Cibotium Barometz, Lin. Ulu Temengoh. Dr. Christ points out in a letter that the specific name should be Baranetz, which is a Russian word meaning little sheep (Baran sheep) from its woolly rhizome. Linné wrote it Barometz by error.

Hymenophyllum Neesii, Hook. Sungei Kertai.

Trichomanes javanicum, Bl. Rocks by the Temengoh river.

Tr. bipunctatum, Poir. Common at Ulu Temengoh (No. 14200, 14204, 14025).

Tr. viridans, Mett.

Caespitose forming a thick mat on tree trunks, rhizome slender covered with red brown hairs. Fronds, half an inch long $\frac{1}{6}$ inch wide, obcuneate broadly winged to the base and with five to seven oblong truncate lobes, marginal band present, the midrib and lateral nerves in each lobe prominent, thick black, venules not distinct. Sporanges on the terminal lobes, 3 or 4, tube sunk in the frond, mouth free dilated two-lipped.

Temengoh (14203.) This differs from *T. muscoides*, in its thicker texture and inconspicuous venules, more distinctly two-lipped tube mouth and deeply cut lobes. Originally described from Moulmein.

Davallia solida, Temengoh Campong.

Microlepia kurzii, Clarke. A fine and rare species. Ulu Temengoh (14208).

M. speluncae, L. Common at Ulu Temengoh.

Schizoloma gracilis, Bl. Temengoh (14230).
A new species to the flora near *Sch. lobata* Poir. but with veins not anastomosing.

Adiantum lunulatum, Burm. On banks in forest between Kwala and Ulu Temengoh: certainly wild here.

A. caudatum, L. Lenggong, limestone rocks.

Cheilanthes tenuifolia, Sw. Common at Ulu Temengoh.

Pteris patens, Hook. Ulu Temengoh.

Pt. aquilina L. Common waste ground.

Ceratopteris thalictroides. Swampy spots Temengoh.

Thamnopteris nidus, L. At Ulu Temengoh not very common.

Asplenium resectum, Hook. Woods Temengoh.

A. vulcanicum, Bl. Lenggong.

Diplazium alternifolium, Bl. New to the Peninsula: but very near *D. Bantamense.*

D. subserratum, Bl. On trees upper Camp Ulu Temengoh.

D. pallidum, Bl. Ulu Temengoh.

D. asperum, Bl. Ulu Temengoh (14206).

D. tomentosum, Hook. Woods Ulu Temengoh.

(*D. crenato-serratum*, Bl. New to the Peninsula was collected at Taiping on the return journey).

Anisogonium lineolatum, Mett. Ulu Temengoh on the banks of a stream in the forests.

A. esculentum, River banks, Temengoh. etc.

Mesochloena polycarpa, Bl. Ulu Temengoh.

Aspidium polymorphum, Wall. Ulu Temengoh (14199).

A. variolosum, Wall. Ulu Temengoh.

A. coadunatum Wall. Ulu Temengoh (14216).

A. singaporianum, Temengoh Woods.

A. angulatum, Temengoh.

Lastrea padangensis, Bedl. New to the Peninsula Temengoh (14198).

L. cuspidata, Wall. Lenggong (14212) new to the Peninsula.

L. calcarata, Bl. Common Temengoh.

L. sagenioides, Bl. Ulu Temengoh (14194).

L. syrmatica, Willd. Temengoh.

Nephrodium amboinense, Presl. Temengoh.

N. glandulosun, Bl. Ulu Temengoh.

N. urophyllum, Wall. Kuala Temengoh (14213).

Polypodium obliquatum, Bl. Sungei Kertai on trees.

Niphobolus adnascens, Sw. Ulu Temengoh.

N. acrostichoides, Sw. Ulu Temengoh.

Pleopeltis pteropus, Bl. Ulu Temengoh (14223).
Pl. accedens, Bl. Common on trees Ulu Temengoh.
Pl. angustatum, Temengoh.
Pl. irioides, Common in the Kampong Temengoh.
Pl. superficiale, Bl. Ulu temengoh.
Pl. longifolia Mett. Temengoh (14236).
P. Phymatodes, L. Not very common Ulu Temengoh.
Selliguea feei, Hook. Temengoh.
Loxogramme lanceolata, Sw. Temengoh Woods.
P. involuta, Don. Not rare, Temengoh Woods.
Antrophyum reticulatum, Kaulf. Trees by the Sungei Kertai.
Vittaria scolopendrina var *loxogrammoides*, n. var.

This variety differs from the type in its thin fronds 18 inches long, and ½ to ¾ inch wide, flaccid with thick end margins, and the slender long petiole 4 to six inches long. It has so much the appearance of a Loxogramma that I took it for one at first, but Dr. Christ pointed out it was a Vittaria and suggested that it was a distinct species and might be named *V. loxogrammoides*. I suggested it might be a peculiar woodland form of *V. scolopendrina* especially as I have also found it at Kranji in Singapore Dr. Christ writes "The thin fronds dilated towards the tip as well as the insertion of the soriferous lines, finally the flaccid tissue not stiff seems to me sufficiently different from the *Vittaria scolopendrina* of Trimen from Ceylon. But it is quite possible that the plant is more variable than I thought and you being on the spot are right not to separate this form, you know anyway that the Vittarias are a terrible group. The more one studies them the more confused one gets. It is a study for the botanists of the 20th century perhaps even for those of the 21st."

Certainly as Dr. Christ says the genus is very difficult; there are so few definite characters that the varieties seem those of degree rather than of detail.

Tænitis blechnoides, Sw. Temengoh Woods.

Drymoglossum piloselloides, Presl. Orchard trees at the Village.

Hemionitis arifolia, Burm. In grassy thickets in the campong, Ulu Temengoh.

Stenochloena sorbifolia, Temengoh.

Gymnoopteris spicata, L. fil. On trees Temengoh.

G. flagellifera, River bank Temengoh.

Lygodium circinatum, Sw. Very large borders of forest Ulu Temengoh (14242).

Angiopteris evecta, Hoffm. Temengoh.

Kaulfussia aesculifolia, Bl. Temengoh Woods.

Helminthostachys Zeylanica, L. Common in the cleared places near the Village.

LYCOPODIACEAE.

Lycopodium cernuum, L. Temengoh.

L. phlegmaria, L. Temengoh.

L. nummulariifolium, L. Temengoh.

Selaginella semicordata, A Spring Banks at Ulu Temengoh (No. 14471 and 14472).

S. plumosa, Spring. Temengoh (14469, 14470, 14457, 14473).

S. Wallichii, Spring. Ulu Temengoh (14450).

S. inaequalifolia, Spring. Ulu Temengoh (14459).

S. oligostachya, Bak. Temengoh (14464).

I am indebted etc Colonel Beddome and Dr. Christ for identifications of Ferns and Colonel Beddome for those of Selaginelleae.